

66182 The beautiful is as useful as the useful.—Victor Hugo.

BIRDS

AND ALL NATURE



CONTENTS.

Page

MAY [Poem]	193
UNCLE NICK ON FISHING (Irwin Russell)	194
THE MAGPIE [Illustration]	195-196
THE MAGPIE	197
A BUTTERFLY'S HISTORY	197, 198, 199
THE DEAD BIRD (Nelly Hart Woodworth)	199
A SUBMERGED FOREST	200
RED-BREASTED NUTHATCH [Illustration]	201, 202
RED-BREASTED NUTHATCH (Lynds Jones)	203
MIGRATORY BIRDS	204
ACROSS THE WAY (George Klinge)	205
THE PURPLE MARTIN	206
THE PURPLE MARTIN [Illustration]	207, 208
A GLIMPSE AT BEAUTIFUL PICTURES (Anne Wakely Jackson)	209
RING-NECKED DOVE	212
RING-NECKED DOVE [Illustration]	213, 214
THE YOUNG NATURALIST	215
OPOSSUM (Shaw)	218
OPOSSUM [Illustration]	219, 220
THE CECROPIA MOTH (Rest H. Metcalf)	223
THE GENISTA (Wm. Kerr Higley)	224
THE GENISTA [Illustration]	225, 226
BIRDS AND FARMERS	228
SILLIEST BIRD IN THE WORLD	229
THYME (Dr. Albert Schneider)	230
DIGITALIS [Illustration]	231, 232
A CURIOUS SURVIVAL (Ella F. Mosby)	233
THE RAVEN	235
THE RAVEN [Illustration]	237, 238
GOOD UNCLE TO ANTS	239
EGYPTIAN TREES FOR AMERICA	240

EDITED BY C. C. MARBLE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.



203 Michigan Avenue, Chicago, Ill.

A. W. MUMFORD, PUBLISHER.

\$1.50 a Year.

15 Cts. a Copy.

BIRDS AND ALL NATURE.

MONTHLY—SEPTEMBER TO JUNE.

Illustrated by Color Photography.

TERMS AND CONDITIONS OF PUBLICATION:

PRICE. Subscription price is one dollar and fifty cents a year, payable in advance, with 50 assorted pictures, \$2.00; single copy, 15 cents.

POSTAGE IS PREPAID by the publisher for all subscriptions in the United States, Canada and Mexico. For all other countries in the Postal Union, add 30 cents for postage.

CHANGE OF ADDRESS. When a change of address is ordered, both the new and the old address must be given. Postmasters are not allowed to forward second class matter until postage is sent to pre-pay charges. It costs two cents per copy to forward this magazine. Subscribers who do not observe this rule should not ask us to send duplicate copies.

DISCONTINUANCES. If a subscriber wishes his magazine discontinued at the expiration of his subscription, notice to that effect should be sent, otherwise it is assumed that a continuance of the subscription is desired.

HOW TO REMIT. Remittances should be sent by check, draft, express order, or money order, payable to order of A. W. Mumford. Cash should be sent in registered letter.

AGENTS. We want an energetic, courteous agent in every town and county. Write for terms and territory.

RECEIPTS. Remittances are acknowledged by change of label on wrapper, indicating date to which subscription is paid.

All letters should be addressed to **A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago, Ill.**

MAGAZINES for 1897 (12 Nos.), \$2.00; single numbers, containing 10 colored pictures, 20 cents. 1898 or 1899, \$1.50 a year; single numbers, 15 cents.

BOUND VOLUMES I, II, III, IV, V, VI, VII, each 8vo, 244 pages, from 40 to 60 colored pictures, 8x10 in. Cloth, \$1.50; Half Morocco, \$1.75; Full Morocco, \$2.00. Combined volumes I and II, III and IV, V and VI, Cloth, \$2.50; Half Morocco, \$3.00; Full Morocco, \$3.50.

Exchange price for bound volumes when magazines are returned: Single volumes—Cloth, \$1; Half Morocco, \$1.25; Full Morocco, \$1.50. Combined volumes—Cloth, \$1.50; Half Morocco, \$2.00; Full Morocco, \$2.50.

COLORED PICTURES, in monthly sets of ten, for 1897, each set 15 cents, or 12 sets \$1.50. For 1898, each monthly set of eight, 12 cents, or 12 sets for \$1.25. 1899 pictures in monthly sets of eight, 12 cents, or entire year's collection, 10 months, \$1.00. Pictures assorted as desired, 2 cents each. No order received for less than 20 pictures.

One-third discount on pictures when bound volumes, magazines or subscriptions are ordered.

PREMIUMS. Either of the following colored pictures sent free with subscriptions: Song of the Lark, 18x21; Gladstone 18x24; The Golden Pheasant, 18x24; Birth of the American Flag, 12x18; or Sixteen Pictures from magazine.

\$6.10 FOR \$2.90

A Combination Offer That Means Something.

BIRDS AND ALL NATURE (one year).....	\$1.30
CHILD-STUDY MONTHLY (one year).....	1.00
BOUND VOLUME BIRDS AND ALL NATURE..	2.00
GAME OF BIRDS.....	.35
GOLDEN PHEASANT (Colored Picture).....	.25
LITERATURE GAME.....	.25
GAME OF INDUSTRIES.....	.25
TWENTY-FIVE PICTURES (From Birds and All Nature)	.50

ALL FOR ONLY
\$2.90

The total amount of value..... \$6.10

You now subscribe for **BIRDS AND ALL NATURE**. Why not advance your subscription one year and receive the above articles as well, by taking advantage of this offer? If you are not a subscriber, now is your opportunity, for dollars do more than double duty in this combination offer. Just think, only \$1.40 more than the cost of **BIRDS AND ALL NATURE** and you get *Child-Study Monthly* one year, one bound volume **BIRDS AND ALL NATURE**, three interesting games and twenty-six beautiful pictures. Read about them:

CHILD-STUDY MONTHLY—A Journal devoted to Child-study in departments that bear directly on the practical education of the child. Edited by Alfred Bayliss, State Supt. Public Instruction in Illinois, and Wm. O. Krohn.

BOUND VOLUME BIRDS AND ALL NATURE—In Full Morocco, Gilt Top and Stamped in Gold, 244 pages, 60 colored illustrations.

GAME OF BIRDS—Illustrations of popular birds, in colors true to nature, on 52 finely enameled cards 2½x3½ inches. Enclosed in case with full directions for playing. A beautiful and fascinating game.

GOLDEN PHEASANT—A beautiful Picture for framing. Printed in natural colors on fine paper, 18x24 inches.

LITERATURE GAME—500 Questions and Answers in English Literature. 100 cards, 2¼x3 inches. Interesting and instructive.

GAME OF INDUSTRIES—Educational—400 Questions and Answers on the great industries of our country. 100 cards, 2¼x3 inches.

REMEMBER—A year's subscription to **BIRDS AND ALL NATURE** and **CHILD-STUDY MONTHLY** alone amount to \$2.50. You get the six other articles for only 40c. If you now take either magazine, or both, your subscription will be advanced one year.

This offer is for a limited time only. Send at once.

A. W. MUMFORD, Publisher, 203 Michigan Avenue, Chicago.

\$1,000 SALARY PER YEAR!

Ladies or Gentlemen We have shared the general prosperity of the country, and we now need one or two permanent representatives in each state to look after our interests, manage our agents, and attend to collections. This position involves no canvassing and is a bona fide weekly salaried position, with all expenses paid, to the right party. It is mainly office work conducted at your own home, with an occasional trip out among the agents. No investment required. Also three salaried vacancies in the traveling department. Enclose references and self-addressed stamped envelope to **PROVIDENCE CO., 29 Canton Bldg., CHICAGO.** Dept. Q.

Wanted, For Sale or Exchange

Advertisements inserted under this heading for three cents per word, each insertion. Cash must accompany advertisement. If you have anything to sell or exchange, or wish to purchase anything, an ad. in this column will bring about the desired result.

FOR SALE—Prehistoric Indian Relics and Chinese Jades. Prof. W. O. Emery, Crawfordsville, Ind.

DO YOU WANT FINE MINERALS?

Brilliant and perfect in color and beauty. New arrivals constantly received from all parts of the world. Choice fire and rainbow tinted Opals, at less than usual prices. Hundreds of rare and beautiful things to enrich and adorn your Cabinet. An exceptionally favorable opportunity to secure showy specimens at less than usual prices. Write to me. It will pay you.

ARTHUR N. FULLER.

Lawrence, Kansas.

Color Your Views.

With our Process you can tint your Portraits, Groups and Landscapes in the most beautiful Natural Colors, and give them a glaze enamel finish of great and lasting brilliancy.

Very Easy, Intensely Interesting, and it Pays. Descriptive booklet free.

Address, **THE HENRY CHEMICAL CO.** Vallejo, California.

CHOICE OF MANY ROUTES

—TO—

CHARLESTON BY THE SEA,

N. E. A. July 7-13, 1900,

Via the popular

MONONROUTE

and G. H. & D. R'y,

Including the beautiful and historic

SOUTHERN ALPINE REGION.

And Returning via

WASHINGTON, D.C.

Parlor and Dining Cars on Day Trains.
Palace Sleeping Cars on Night Trains.

CITY TICKET OFFICE, 232 CLARK ST., CHICAGO.

BOOKS AT LIBERAL DISCOUNTS

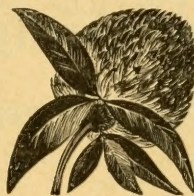
When calling, please ask for **MR. GRANT.**

Whenever you need a book. Address **MR. GRANT.**

Before buying Books, write for quotations. An assortment of catalogues, and special slips of books at reduced prices, will be sent for a 10-cent stamp.

F. E. GRANT, Books, 23 West 42d St., New York.

Mention this advertisement and receive a discount.



CANCER, SALT RHEUM, RHEUMATISM, PILES and all Blood Diseases Cured by fluid and solid extract of **Red Clover Blossoms.**

Pest Blood Purifier known, not a patent medicine but **PURE RED CLOVER.** Our preparations have a world-wide reputation. Send for circular. **D. NEEDHAM'S SONS,** 25 Inter Ocean Building, Chicago.



500 BICYCLES \$3.10

all makes, good as new. **NEW 1900 Models, \$11 to \$20 '98 & '99 Models, high grade, \$8 to \$13** Great factory sale, direct to rider. We ship anywhere on approval; send us an order.

EARN A BICYCLE distributing Catalogues for us. We will give one **Rider Agent** in each town **FREE USE** of sample wheel to ride and exhibit.

WRITE AT ONCE for Bargain List and our **SPECIAL OFFER.** Address Dept. 159-P

MEAD CYCLE CO., Chicago.

NEW YORK UNIVERSITY SUMMER COURSES.

Sixth Year—July 9–August 17.

Forty Courses in Thirteen Departments.

University Heights combines the advantages of City and Country. For "Announcement" address

MARSHALL S. BROWN,
University Heights, New York City.

Have Your Magazines Bound.

If you have the last five copies January to May, 1900, of **Birds and All Nature**, send them to us with \$1.00 and we will send you Vol. VII beautifully bound in cloth, gold side and back stamps, gilt top. Magazines can be mailed for 7 cents. We pay postage on the bound volume. **Birds and All Nature** is the only periodical in the world of which the Bound Volumes have a permanent sale.

A. W. MUMFORD, Publisher,
203 Michigan Ave., Chicago.

NESTS AND EGGS

OF NORTH AMERICAN BIRDS.

BY OLIVER DAVIE.

Latest edition, 500 pages, cloth, profusely illustrated, regular price \$2.25.

My Price, \$1.50 Prepaid.

Guide to Taxidermy

will teach you how to skin and mount

BIRDS, ANIMALS and FISH.

It contains 100 pages of valuable information and will be sent postpaid for 35c.

We will send you a nice Egg Drill, Blowpipe and Embryo Hook in case, with Data blanks, for 35c. postpaid.

Egg Catalog free. Our large 1900 Illustrated Catalog, with colored plates of Birds' Eggs, 10c.

NATURALISTS' SUPPLIES.

CHAS. K. REED,

75 W. Thomas,

WORCESTER, MASS.

The Phebe A. Hearst Kindergarten Training School

Offers a Two and a Three Years' Course.

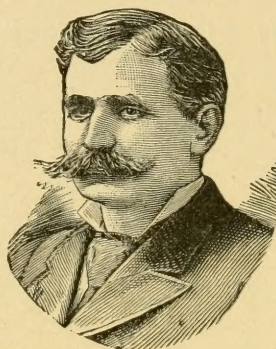
The advanced work for 1899 and 1900 is supplemented by the following eminent lecturers: Hon. Wm. T. Harris, Miss Susan E. Blow, Mr. Hamilton W. Mabie, Miss Laura Fisher, Miss C. M. C. Hart. For further particulars address MISS HARRIET NIEL, 1215 K Street, N. W., Washington, D. C.

Interstate Teachers' Association

Teachers placed in Colleges and Schools.

Governesses and Tutors a Specialty.

MRS. MARGARET M. PENTLAND, Mgr.,
Fine Arts Building, Chicago, Ill.



To Repair Broken Articles use

Major's Cement

Remember
MAJOR'S
RUBBER
CEMENT,
MAJOR'S
LEATHER
CEMENT.

20c. a Copy.
\$1.00 a Year.

BIRD-LORE

Vol. II. Begins
Feb. 1, 1900.

A Bi-monthly Magazine Devoted to the Study and Protection of Birds.

"The bonniest little Magazine ever put together on the subject."

Edited by FRANK M. CHAPMAN.

OFFICIAL ORGAN OF THE AUDUBON SOCIETIES.

Audubon Department Edited by MABEL OSGOOD WRIGHT.

NEARLY EVERY prominent American writer on birds in nature writes for BIRD-LORE, among its contributors being JOHN BURROUGHS, DR. HENRY VAN DYKE, BRADFORD TORREY, OLIVE THORNE MILLER, FLORENCE A. MERRIAM, ANNIE TRUMBULL SLOSSON, EDITH M. THOMAS, J. A. ALLEN, WILLIAM BREWSTER, R. KEARTON, ROBERT RIDGWAY, ERNEST SETON THOMPSON, and many others.

In addition to general descriptive articles, fresh from the fields, BIRD-LORE has departments "For Teachers and Students," wherein are given useful hints in bird-study, and "For Young Observers," designed to develop the love for birds inherent in all children. These, with reviews of current ornithological literature, editorials, and reports of the work of the Audubon Societies, make a magazine which no bird lover can do without.

NOT LESS delightful and entertaining than the text will be BIRD-LORE'S illustrations. They are not made from stuffed specimens or even drawings, but from actual *photographs of the birds in their haunts* showing them at rest or in motion, brooding their eggs, or feeding their young; in fact, the best possible substitutes for the birds themselves.

Among many interesting and valuable features for 1900 will be a series of papers on methods of teaching ornithology by instructors who have made a specialty of this branch of nature-study, and there will be established an ADVISORY COUNCIL, designed to place students in direct communication with an authority on the birds of their region, composed of over 50 prominent ornithologists, residing throughout the United States and Canada, who have consented to respond to requests for information and advice.

THE MACMILLAN COMPANY, Publishers,
66 Fifth Ave., New York City, or Englewood, N. J.

Birds and all Nature

IN NATURAL COLORS

A MONTHLY SERIAL

FORTY ILLUSTRATIONS BY COLOR PHOTOGRAPHY

A GUIDE TO THE STUDY OF NATURE

TWO VOLUMES A YEAR

VOLUME VII.

JANUARY, 1900, TO MAY, 1900

EDITED BY C. C. MARBLE

CHICAGO

A. W. MUMFORD, PUBLISHER

203 Michigan Ave.

1900

COPYRIGHT, 1900, BY
A. W. MUMFORD

BIRDS AND ALL NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. VII.

MAY, 1900.

No. 5

MAY.

The voice of one who goes before to make
The paths of June more beautiful, is thine,
Sweet May! Without an envy of her crown
And bridal; patient stringing emeralds
And shining rubies for the brows of birch
And maple; flinging garlands of pure white
And pink, which to their bloom add prophecy;
Gold cups o'erfilling on a thousand hills
And calling honey-bees; out of their sleep
The tiny summer harpers with bright wings
Awaking, teaching them their notes for noon—
O, May, sweet-voiced one, going thus before,
Forever June may pour her warm, red wine
Of life and passion—sweeter days are thine!

—H. H.

WE MAY HEAR THE BIRD SING.

NELLY HART WOODWORTH.

We may hear the bird sing but we cannot descry
The heart of the singer; the great mystery
Of the singing is hidden from sight, and the heart
Of the sweet singing bird has a vision apart;
We may listen intently to catch the sweet theme,
But who can interpret the soul of the dream?

We may hear the bird sing, catch each generous note
That pours to the air from its quivering throat,
See the breast rent with ardors; unfathomed, deep-stirred
Folded under the song lies the soul of the bird,
Unsounded and soundless, too deep for our reach
Though we listen entranced to its musical speech;
Who sees the lark's soul as it mounts from the sod,
Who sees the clear soul has a vision of God!

UNCLE NICK ON FISHING.

IRWIN RUSSELL.

It alluz sets me laughin', when I happens to be 'roun',
To see a lot ob gemmen come a-fishin' frum de town:
Dey waits tell arter breakfus', 'fo' dey ebber makes a start,
An' den you sees 'em comin' in a little Jarsey kyart!

Now, Jarsey kyarts is springy, an' to studdy up de seat,
De gemmen's 'bliged to ballus' hit wid suffin good to eat;
An' Jarsey kyarts is lighter run, de gemmen seems to think,
By totin' long a demijohn ob suffin good to drink.

When dy gits at de fishin' place, it's 'stonishin' indeed!
Such tricks to go a-fishin' wid *nobody* nebber seed:
Dey poles is stuck togedder wid a dozen jints ob tin,
An' has a block-an'-teeckle for to win' de fishes in!

De gemmen makes a heap o'fuss, an' skeers de fishes off,
An' den dey takes an' sots de poles, some place de bank is sof,
An' den dey hunts a shady place, an' settles on de grass,
An' pruz'ntly heahs 'em: "Dat a spade? I has to pass!"

St. Petah wuz a fisherman, an' un'erstood his trade:
He sot an' watched his cork, instid ob lazin' in de shade!
De gemmen isn't copyin' arter him—dey bettah be!—
Or—*I's* a science fisherman—'t'd do to copy *me*.

When *I* goes out a-fishin', I puts on my ol'est clo'es:
(Dey age's putty tol'able, you'd nat'rally suppose!)
I gits up in de moh'nin', long afore de sun is riz,
An' grabbles wums, *I* tell you! like de yurly bird *I* is.

I's alluz berry 'ticlar 'bout de season ob the moon;
De dark ob hit is fishin'-time—an' time for huntin' coon;
An' den its mighty 'portant, too, as notus shed be tuk
Ob varis' little sarcumstances bearin' on de luck:

You has to spit upon de bait afore you draps it in;
Den keep yo' cork a-bobbin', des as easy as you kin;
Ef someone steps acrost de pole, you knows yo' luck is broke,
Widout dey steps it back agin afore a word is spoke.

Don't nebber, not for nuffin, think ob countin' ob yo' string;
'Kase ef you do, you ain't a-gwine to cotch anoder thing;
But ef a sarpent-doctor bug sh'd 'light upon de pole,
You knows you's good for cotchin' all de fishes in de hole.

Dah! now you has de science what a fisherman sh'd know;
So, any time yo' ready, all you has to do's to go,
An' foller dem instruckshuns—ef you does it, to de notch,
Good marster! won't it s'prise de folks to see de mess you cotch!



COPYRIGHT 1909, BY
A. W. NUMFORD, CHICAGO.

MAGPIE.
 $\frac{2}{3}$ Life-size.

FROM COL. CH. ACCL. SCIENCES.

THE MAGPIE.

(*Pica pica hudsonica*.)

THIS is a rare winter visitor and not much known. Its nest is a very bulky and somewhat remarkable structure, composed exteriorly of sticks of various sizes, forming a spherical mass, the upper portion of which forms a canopy to the nest proper, the entrance being through one

side. The eggs are usually six in number, but often as many as nine, and are of a pale olive or grayish white color, thickly speckled with olive-brown.

The magpie can be taught to talk, is intelligent and inquisitive, and has many of the characteristics of the raven.

A BUTTERFLY'S HISTORY.

(*The Troilus*.)

ELLA F. MOSBY.

THE *Troilus* belongs to the knights or chevaliers, and is a beautiful creature. His front wings are velvety black, spotted with yellow; his hind wings blue, elegantly scalloped, with a long streamer at the end, and when he lifts his wings, the under side is also lovely in marking and color. His double tongue forms a tube for sucking honey from deep flower cups, and may also be coiled up like a lasso when not used. His knobbed antennæ are supposed to be organs of scent by which he detects the perfume of blossoms or of other butterflies. For butterflies have distinct odors; the mountain silver spot smells like sandlewood, and other butterflies have the delicate fragrance of jasmine, thyme, balsam or violets. The anosia butterfly has a faint smell of honey. The sight of the butterfly, in spite of his single and compound eyes, the latter made up of many shining facets like cut gems, is not believed to be very keen. It is thought that while he perceives color in mass, he has little perception of form, and is easily deceived. The white butterflies, for instance, alight on the white-veined and spotted leaves in a garden, while seeking white blossoms. No organs of hearing have ever been discovered, and, for the most part, the movements of the butterfly are noiseless as drifting snow-flakes, the only exception being

a slight click from a sudden closing of the wings, or in rapid flight.

The whole structure of the creature is for movement. He has no brain, only a cluster of nerves somewhat like one; no heart, only a segmented tube, in which a white blood circulates; no distinct lungs, but air-chambers throughout the whole body, so that it is easily poised amid the aerial waves, as he glides, or flutters securely above the earth. There are many muscles, two or three pairs of legs, and about five pairs of hooked arrangements called pro-legs; and his glory lies in his four broad wings of radiant colors, covered with silvery and shining plumes of softest texture. These wings are to him as the knight's steed, bearing him proudly in his circling combats with his rivals, or in his sportive ascents with his mate, or on his gay journeys with a crowd of winged comrades along the aerial highroads. He need not *seek* adventures, for when he is a butterfly he has already passed through wonderful experiences.

His life begins with a tiny egg, the size of a pin-head, laid singly on the *under* side of a leaf for protection. Every species of butterfly has its own special food-plants, and will feed from no others; but do not imagine that the pastures of our *Troilus* are limited. He feeds upon two of the largest and most beautiful tree families—the *Rosaceæ*

and the *Lauraceæ*—beautiful for fruit, flower, foliage and fragrance. With the rose family alone the range is immense, embracing, as it does, not only the rose, but the hawthorn, the meadow-sweet, the mountain ash, the strawberry, the cherry, apple and all the lovely orchard trees, while with the other family we find the glossy and shining leaf of the magnolia tribe, and the aromatic odors of sassafras and spice-wood. The butterfly eggs are marvels of color, pale green or white at first, changing to all sorts of iridescent tints as the life inside matures, and also of form, for they mimic the delicate sea-fashions of urchin and coral, the richness of oriental mosques, and the intricacy of design in Gothic windows.

Let us fancy the egg of our *Troilus* fastened—a fairy cradle, indeed—on the leaf of a wild cherry tree that has tossed its sprays of feathery white bloom, and its rustling leaves all June long in sunshine and wind and twinkling shower beneath a summer sky. When the shell is broken, what a strangething creeps forth!—well-named a larva or *mask*, for it is a disguise that has no trace of a winged nature. The lover of the butterfly shrinks with loathing from this hideous creature, dragging itself slowly along in quest of the food which it greedily devours—the fresh, sweet leaves of the tree that has sheltered it! But unless it eats and grows there will be no butterfly, and sometimes the skin is cast off as many as five or six times, even the inner lining as well as the outside skin, to give its growth free play. If the caterpillar were large it would be terrible, for it protects itself, being soft-skinned and often helpless, by a mimicry of rage, pawing the ground, lashing its head furiously from one side to another, as a lion lashes its tail, rearing itself up menacingly in a sphinx-like attitude, grinding its mandibles with a grating sound. Its color is at first usually green like the leaf it feeds on, but it afterwards develops bright hues in some species. The *Troilus* caterpillar is green with a yellow stripe on each side, and row of blue dots, while its under side and feet are reddish.

These varied colors show little, however, on the tree, for the leaves of fruit-trees, especially, quickly assume a yellow tint, and are streaked and spotted. Caterpillars protect themselves in many ways; some make a tent of a leaf near their feeding-ground, turning over an edge under which they creep, or weaving the different corners of the leaf closely together with silken threads. Even the petals of a blossom may be secured by a filmy web. If the caterpillar must spend the winter as a caterpillar, it makes of the leaf a winter-house, which it covers with wood-colored silk, and weaves the thread securely to the skin. These nests resemble closely the buds of the tree.

After the caterpillar stage of humiliation and danger, comes the strange period of sleep or seeming death, when the cocoon or chrysalid appears. The name *pupa* or babe is also used, from the likeness to an infant in swaddling bands. The caterpillar was always liable to curious fits of drowsiness or stupor; this stage of the pupa is a prolonged stupor, and it prepares for it by rolling off the garment of skin, and leaving it underfoot in the silken shroud or cell. Sometimes it sleeps in the earth, sometimes in a rock crevice, sometimes hangs like our *Troilus* looped up by a thread to a tree. The case has knobs or horns to protect the sleeper when the wind blows it against anything. It is sensitive to light, and swings towards or from it, according to need. At last comes the resurrection. From a narrow slit emerges a crumpled, wrinkled thing. If the struggles are long, dare not aid even by a touch! The butterfly is of such delicate texture that outside help means mutilation. Let it alone. Soon are the wings smoothed—I saw one hang himself up, and lengthen and lengthen, until he was about twice as long as at first—then he spreads them in flight, a glorious and joyous creature of the sunshine! He likes companions, and quickly will he find himself greeted by a Jason or splendid Ajax, or encounter a flock of his own kind, with whom he may feast by roadside puddle or beds of opening flowers.

Marvelous care is shown in the provision for the awakening from its long slumber. The threads are woven so loosely near the place of opening that they are easily broken, even in his first feebleness. The old garment, rolled in a heap at his feet, cannot impede or

entangle him. He is now the *imago*—"image in full of his species,"—and, like the fairy, Ariel, he will follow summer as it flies, and swing "under the blossom that hangs on the bough"—an airy spirit of joy!

THE DEAD BIRD.

NELLY HART WOODWORTH.

Hark to the beating at the lattice!—
sure

It is some winged creature asks for
room

Within my walls. Shall I deny its
quest,

Refuse a welcome to the homeless
guest?

Who could the rigor of such night
endure?

Nay, open wide the window. Come,
oh, come,

And share my shelter! All the air was
stirred

By the mysterious pulsing of the wings
In useless haste, until their murmur-
ings

Grew faint and fainter; now they pulse-
less lay.

Again they found the light—my eyes
were blurred

With tears of pity. "Here upon my
breast

Thou shalt have rest. Rest thee, dear
bird, I pray!"

And as the bird's throat trembles when
the song

Throbbing for wings pours to the gen-
erous air,

So my heart throbbed with pity and my
hand

Went quivering as I held the stranger
there.

The velvet wings dropped heavy. O'er
the eyes

There came a mist, like hoary mists
that roll

Far up the mountain, blotting out the
skies

And leaving scars upon the lonely
soul;

The stars were blurred, the hilltops
canopied,

The valleys lost, the little bird was
dead.

THE FIELD DAISY.

JENNY T. RUPRECHT.

Nomadic queen with softly petaled
face,

Thine is a beauteous throne where'er
thou art,

And thine a reign triumphant from
the start;

And though thy throne were in half-
desert place,

Or where thou may'st behold the brook-
lets race,

Or just above the sleepy valley's
heart,

Or higher up the grasses tall to
part—

Queen of the fields! thou reign'st with
witching grace.

If shine, 'tis well; if shade, thou mur-
mur'st not,

For thou hast learned of nature
patient trust—

Glad of the cloudless light all golden
wrought,

Nor sad if shadows fall, as shadows
must—

All these shall flee before thy floral
reign,

And leave fresh charms throughout
thy wide domain.

A SUBMERGED FOREST.

MANY years ago, even so far back that the traditions of the oldest Siwash extend not there-to, there was some vast upheaval of mother earth on the shores of Lake Samamish that sent a portion of the big Newcastle hill sliding down into the lake, with its tall evergreen forest intact, and there it is to this day. About this time of the year the waters of the lake are at their lowest, and then the tops of the tallest of these big submerged trees are out of the water, but never more than ten or twelve inches.

Unfortunately for the curiosityseeker and traveling public generally the submerged forest is on the opposite side of the lake from the railroad and the station of Monohon, and very few people ever see the phenomenon unless they take the time and pains necessary to reach it.

Sam Coombs, the pioneer, has just been over to view the submerged forest, and he is very enthusiastic concerning its beauties and mystery. He talks Chinook fluently, but with all his quizzing of the red-skinned inhabitants he has never learned anything that will throw any light on the history of the forest under water. The waters of the lake are very deep, and the bluffs back of the beach very precipitous, so that the only explanation of the freak is that either by an earthquake or some other means a great slide has been started in early times, and it went down as a mass until it found lodgment at the bottom of the lake. At this time one can see down into the glassy, mirror-like depths of the lake for thirty feet or more. Near the banks the forest trees are interlaced at various angles and in confusion, but further out in the deep water they stand straight, erect, and limbless and barkless, 100 feet tall. They are not petrified in the sense of being turned to stone, but they are preserved and

appear to have stood there for ages. They are three feet through, some of them, and so firm in texture as to be scarcely affected by a knife blade. The great slide extended for some distance, and it would now be a dangerous piece of work for a steamer to attempt passage over the tops of these tall trees. Even now the water along shore is very deep, and a ten-foot pole would sink perpendicularly out of sight ten feet from shore line.

All over this country are found strata of blue clay, which in the winter season are very treacherous, and, given the least bit of opportunity will slide away, carrying everything above with them. This is the theory of the submerged forest of Lake Samamish. It probably was growing above one of these blue earth strata, and heavy rains, or probably an earthquake, set it moving. The quantity of earth carried down was so great that the positions of the trees on the portion carried away were little affected. It is hardly to be believed that the earth suddenly sank down at this point and became a portion of the beautiful lake.

Few such places exist. There is a place in the famous Tumwater Canon, on the line of the Great Northern, near Leavenworth, which is in some respects similar. At some early time a portion of the great mountain side came rushing down and buried itself at the bottom of the canon. Now there is a considerable lake, and in the center stand tall, limbless trees, different in species from those growing along the canon.

At Green Lake, near Georgetown, Colo.—a lake which is 10,000 feet above sea level—is a submerged forest of pine trees, some hundred feet tall, but not so numerous as in Lake Samamish. This same theory explains their presence as given above.



CHICAGO COLORTYPE CO

RED-BREASTED NUTHATCH.

(*Sitta canadensis.*)

BY LYNDS JONES.

IT IS doubtful if any bird has been more persistently overlooked or more universally confounded with a closely allied species than the subject of this sketch. His superficial resemblances to the white-breasted nuthatch, either in color or voice, are not striking, certainly not so much so as with other species which are not so confused, yet it is certainly true that but a small proportion of the laity are aware that there are two nuthatches roaming the woods, the one a migrant in the Middle and Southern States, the other resident wherever it is found. What, then, are the marked differences between them? The red-breast is decidedly smaller than his cousin, his breast is tinged with red or brown instead of the immaculate white, and there is a black line running through the eye to the back of the head, separating the white line above it from the white throat; the cry is a nasal, long drawn 'yank, yank,' very different from the brisk, crisp, business-like utterance of the white-breast. Moreover, he is a traveled gentleman who spends the winters in the South and his summers mostly north of the United States, while we have the white-breast with us during the entire year. So much for differences.

The habit of climbing head downward, sidewise, or any way, is common to all nuthatches. They feed upon the insects and their eggs and larvæ which inhabit the bark crevices, but also sometimes vault into the air in pursuit of a flying insect, after the manner of the flycatchers. In the North, where the red-breast sometimes tarries well into the winter, rarely remaining all winter long, they fasten nuts and seeds in cracks or crevices and hatch them with the beak, eating the meat, of course. It is this habit of 'hatching' nuts that gives the group its English name.

The red-breast is a bird of the whole of the United States and at least south-

ern Canada, but can be called common only locally and occasionally. Some seasons it may not appear at all at some stations in its migration routes, and again be common for a short period, especially in the autumn. In most central localities it may be expected during the last two weeks of April and the first week of May, and again from September well into the winter months, if not all winter long.

The nest is placed in some dead stub in a hole excavated by the birds, usually several feet from the ground—as high as twelve feet sometimes. The nest material is some soft substance like fine grass and rootlets. The excavation is usually shallow, scarcely more than six inches down the stub, with other even shallower holes in other trees in the vicinity used as roosting-places for the male during incubation. In beginning the excavation, the birds drill small holes in a circle in the bark, then take out the center piece. In several instances the bark about the entrance to the nest cavity was coated with pitch in which were sticking the red-breast feathers of the architects. This pitching of the entrance to their home does not seem to be a habit common to all members of the species, however, for few collectors mention the pitch, as they certainly would if it were present.

While birds of the woods, neither the red-breast nor the white-breast are strictly confined to the woods during the seasons when they are not rearing a brood. The red-breast is frequently seen on the fences and out in the open, gleaning from weed-stalks, during his southward journey. He also seems very fond of orchards and the ornamental trees in the yard where he does excellent service for the next season's fruit and foliage. He is, perhaps, a little less inquisitive than his white-breasted cousin, but his small size and drawling voice make him a pleasant fellow to meet.

MIGRATORY BIRDS.

B. W. JONES.

"The stork in the heavens knoweth her appointed times; and the crane, and the turtle, and the swallow observe the time of their coming."—*Jer. 8: 7.*

THE migration of birds, as Baily observes, is by no means the least interesting part of their history. I have noted for many years the migrations of the birds that make a longer or shorter stay with us, summer or winter, and have tabulated their arrivals and departures. And it has been to me a labor of love. Few things cast such attraction around the young and tender spring or over brown and matured autumn, as the coming and going of migratory birds. With delight we welcome the first notes of the purple martin, the bank or sand swallow, and the chimney swift, as they return to us in spring from the far sunny southland; and with feelings of wonder we witness the flight of the wild geese, as they pass over us high in air, or listen to the notes that tell us the whippoorwill and the chuckwill-widow are again the denizens of our groves. And, night after night as I listen to their weird song, feelings almost akin to superstition creep over me, till I can imagine their utterances to be the omen of good or ill to the hearer. There is no more mysterious bird in our land than the chuckwill-widow. Its migration so far northward as southeast Virginia has been doubted by some naturalists, but facts are against them.

And as I look abroad in autumn, and view the beves of snowbirds that have just returned to us, and hear again the familiar "chip," "chip," as a passing vehicle puts them to sudden flight, how the finger of thought touches again on memory's bell, and I think of boyhood's happy hours, when I welcomed with delight the snowbirds back again to our lanes and fields.

Each feathered songster, as it revisits us from northland or southland, awakens feeling of profoundest interest, and if we have within us a single spark of that divine love of nature that

dwells with the poet or the naturalist, we instinctively receive the birds back to their old haunts as we would welcome a long-absent friend. What boy of sensibility, having a spark of the nobler touch of manhood, could have it in his heart to harm the least of these sinless creatures that enliven our homes with their presence and song? Who can look without admiration upon them? Who could wish to destroy them? And when we reflect that the martins, willets, swifts and swallows that sport about our homes in summer, and the mocking bird that trills its polyglot song in our cedar groves by night, have returned to us from tropical or sub-tropical climes—that only a few weeks before they were flitting through the orange groves of Cuba, or building their nests amid the vine-latticed thickets of Florida, we cannot but admire and wonder at that "peculiar instinct," as Howitt calls it, that guides them with such unerring certainty through all the changes of their mysterious round.

For a period of twenty years the average time of the arrival of the purple martin has been about the last five days in March; and its departure for the South the second week in August. A few individuals may remain longer, but it is only when their breeding has been delayed. The earliest appearance of the martin that I have noted was the 8th of March, 1871, the latest the 26th of April, 1885. The last date was a cold and backward spring. This bird rears two broods of four or five each during the four months that it remains with us.

The chimney swift comes a week or ten days later than the martin, and seldom begins to build before the 10th of June. It raises one brood of four to six young, usually in some unused chimney. It remains with us longer than the martin, even until the cool

nights of the last of September remind it that "the summer is over and gone." The flight of this bird is employed as a weather sign by country people. When it soars high, they say fair weather will continue, but when it flies low, then rain is near at hand.

The whippoorwill arrives, commonly, the last of March, but often not before the 10th or 15th of April. The chuckwills-widow comes three weeks later. Both of these strange birds rear one brood of two young. The nest is placed upon the bare ground, under a clump of low bushes, or a dense holly, or other low-growing tree. The eggs have the same markings as those of the bull bat, or night hawk, another very interesting migratory bird.

The catbird and the wood sparrows do not reach us till near the end of April, and often May is far advanced before these birds are noticed. The last is one of the sweetest songsters of our groves in summer, rivaling any bird of our clime. It seeks the coolest and darkest wood, where it pours forth its notes hour after hour, being

one of the earliest to begin its mating lays.

The humming bird is the latest visitor to come to us in summer. This diminutive aerial voyager is one of the most charming of the migratory tribe, and worthy all the admiration that has been lavished upon it. It loves to sport in the flower gardens, where it sips the nectar from the honeycups of Flora's train. Only one species comes to us, the well-known ruby-throat.

But the young reader interested in these things should begin observation, and make a list for himself of all the migratory birds in his locality. A good form for such a record may be found in Howitt's "Book of the Seasons," an English work, but one from which a great deal about nature can be learned.

We will close our too brief sketch with the inquiry of Mrs. Kimball, of Connecticut:

"O, wise little birds, how do ye know
The way to go,
Southward and northward, to and fro?
Far up in ether piped they,
'We but obey
A voice that calleth us far away.'"

ACROSS THE WAY.

GEO. KLINGLE.

A distant line of misty hills,
A stretch of meadow low,
With wreaths of brush a-skirt the woods,
Midst fabrics spun of snow:
A vista through the forest trees—
A temple if you choose,
With pictured screen and arabesque,
Mosaic's dusky hues,
Dim mullioned windows half confessed
Beyond far-columned aisles,
And arches lost and found anew
Through tracery's defiles;
A roof? . . . we might perchance ascribe
The misty, stooping sky
Beyond the wreaths of crystal
Swung where winds go singing by.
Beneath, where worshiper might tread
A glimpse of crystal tile,

Caught through the weeds and tangled reeds
Which guard the near defile.
A myriad forms a-glint and white
Close, close beneath the feet;
Fantastic hands that reach across
A myriad hands to greet;
Low shrubs in fleecy, white array,
Tall stems with hood and wings,
And vines a-glint in crystal lace
Wound through fantastic rings;
And grasses frosted into gems;
Near by a bough bent down
With such a wealth of clinging leaves
Stained deep in ruddy brown.
These and the woods' low breath of song
Just now across the way;
To-morrow? . . . visions change, you know,
To meet each hour of day.

THE PURPLE MARTIN.

(*Progne subis.*)

BEAUTIFUL and interesting as this bird is known to be, less has been said about it than of any of our common birds of agreeable song and manners. Its common names are house martin, purple swallow, American martin, and violet swallow. The young male is several years in attaining the uniform glossy violet-black plumage, the steel blue feathers appearing in gradually coalescing patches. It is common to the whole of temperate North America, wintering in Mexico and the Bermudas. It is only accidental in Europe. The adult female is glossy blue-black above, becoming hoary grayish on the forehead, and sometimes on the nape also. The young are similar to the adult female.

Ridgway says that no bird of America is more deserving of protection and of encouragement to live about the habitations of man than the purple martin. One pair of them will destroy more insects in a season than all the English sparrows in a township will kill in their life-time. Besides, their notes are pleasing to the ear, and their actions both when on the wing and when perching upon their boxes extremely interesting. During the breeding-season the male has a continued and varied song of great beauty and considerable power; and it is as much on account of the sweetness of their notes as for their familiarity and usefulness that these birds are such general favorites. In the wild woods where they have not had opportunity to avail themselves of man's hospitality they are as lovely and musical as when semi-domesticated in our door-yards, and, it is said, are in all respects exactly the same birds. When Audubon was traveling through the Middle States, he reported that almost every country tavern had a martin-box on the upper part of its sign-board, and commented: "I have observed that the handsomer the box, the better does the inn prove to be." The Indians hung up calabashes for the

martins, so they would keep the vultures from the deerskins and venison that were drying. Mr. Nehrling says that the martin is as well satisfied with the simple hollow gourd attached to a pole near a negro hut as with the most ornamental and best arranged martin-house in the beautiful gardens and parks of rich planters and opulent merchants. He claims that where no nesting boxes are provided our martin will not breed, and that it hardly ever accepts nesting-boxes attached to trees, preferring localities where the chance is given to dart in and out uninterrupted by any obstacle.

The struggle between the martins and sparrows is so bitter that one pair of martins watched by Mr. Widmann adopted the plan of never leaving the nest alone, taking turns in going for food, because, as he explains, "it is comparatively easy to keep a sparrow out of a box, but it is impossible for a martin to dislodge him after he has built a nest."

Mr. Keyser says that in the autumn the martins assemble in flocks, sometimes large enough to suggest an ecumenical council, and fall to cackling, twittering, discussing, and in many other ways making preparation for their aerial voyage to another clime. They really seem to regret being compelled to leave their pleasant summer haunts, if one may judge from the length and fervor of their good-byes. "Perhaps they are like human beings who have a strong attachment for home, and must visit every nook and tryst to say *au revoir* before they take their departure. One can easily imagine how dear to their hearts are the scenes of their childhood, and of their nest-building and brood-rearing." After departing, they sometimes return in a day or two before they begin their southward pilgrimage in real earnest. Do they get homesick after they have gone some distance, and return once more to look upon the familiar scenes? It is one of the mysteries of bird life.



PURPLE MARTIN.
Life-size.

FROM THE U. S. NATIONAL MUSEUM
[1911]



A GLIMPSE AT BEAUTIFUL PICTURES.

ANNE WAKELY JACKSON.

HOW many of you, I wonder, have a west window? Not one opening upon a blank wall, nor upon a vista of houses, but one from which you can see the sky. If your sky-view extends to the horizon, you are indeed blest; for then your window is no less than a frame for the most beautiful pictures—nature's own.

No landscape painter ever lived who could put upon canvas such beauty as you may see, on the majority of days, from your west window. It will only cost you a little time, and you will be richly repaid for time thus spent.

Of course finer views can be seen from a hilltop, or looking across an open plain. But one cannot often be in these places, while one might spare ten or fifteen minutes to stand by the window at sunset?

After a busy day, I know of nothing more composing to the spirit than the contemplation of some majestic form of beauty. And what could be more tranquillizing than the ever-changing beauty of a sunset?

Unless the day close enveloped in clouds, there will be some picture, well worth looking at, to be seen from your window. When a sunset is unusually gorgeous, we frequently exclaim, "That is the most beautiful one I ever saw!" But when we have watched them day after day, we will find comparisons impossible. Each one will have a special beauty of its own, quite beyond compare. Some will be more brilliant than others, but each one will be perfect in its way, and every one will have something new of beauty to reveal to us, if we look with seeing eyes.

I am particularly blessed with an open view to the west, just screened at its base by a delicate fringe of trees. The sunsets this winter have been a constant joy to me, and I long for others who love the beautiful to share this great pleasure with me.

The artistic nature, and love and ap-

preciation of beauty, are well developed in many people whose lives are so hard and busy and full of care, that the delights of the world of art are out of their reach. It is to these particularly that I would commend the world of nature, which is more wonderful and far more beautiful than any art, and is a free gift to all.

It is an interesting study to note the different effect of the leafless trees against various backgrounds. I am one of the people who think trees are more lovely in winter than in summer. Nothing can be more exquisite, to my mind, than the tracery of bare branches and twigs against the sky.

What a study is offered by the varying lines of different trees—the limbs of some starting from the main stem in graceful curves, while others are twisted and bent at sharp angles.

During the cloudy days, I am apt to think a gray background the best that could be imagined. But next morning, perhaps, the clouds have melted away, and I find my trees wearing an entirely new expression, against the bright blue sky. Where they appeared just dark lines against the gray, they have brightened up, and taken on new and varied colors, seen against the blue; and I notice how much darker the trunks and lower limbs are, compared with the upper branches.

How different, again, they look with the sunset sky behind them! The whole western horizon, and upward for quite a space, is a blaze of orange flame! How black they look, silhouetted thus! Again, we have a pale, cold orange, or pink, fading into golden white! How clearly every twig is brought out!

How is it possible that we can pass such beauty by unnoticed, or be indifferent to it because it is common? It should be the cause of great rejoicing, that this miracle of beauty is an almost daily occurrence.

If the winter sunsets are less gor-

geous than those of summer, they are full of refinement of detail. Theirs may be a cold beauty, but it is so clear cut and perfect.

Dear reader, if you possess the frame, don't let the pictures escape you. Remember that any day not ab-

solutely cloudy and dull, will furnish you with a masterpiece. And even after the last bright rays of the dying sunlight have faded away, glance out of the window again, as you pass, for perhaps the calm beauty of the evening star has a message for you too.

GOOSE PLANT IN BLOOM.

ALL lovers of plants and flowers should visit the greenhouse at Washington Park, Chicago, and see the goose plant. It is growing in one of the small span-roofed structures, and as seen to-day there are over a dozen goslings and three or four geese growing on one plant.

One of the biggest geese is over a yard long and broad in proportion. This plant is one of the most unique, rare and valuable known to scientists. Its correct name is *Aristolochia gigas Sturtevantii*, and it was brought here for the World's Fair. At the Fair, however, it bore only one or two flowers, as it was too young to bear more. It is a native of South America and even there

is considered a marvelous product. In one of the greenhouses next to the goose house at Washington Park is a collection of caladiums of the most varied shapes and colors ever dreamed of. Mr. Kanst, the head gardener, says the collection has no duplicate. Many of the plants have leaves as delicately traced as the finest valenciennes laces. A newspaper may be read if covered with one of these transparent leaves. The colors are all shades of red, pink, maroon, crimson and yellow. The collection of water lilies is now at the best and is truly beautiful. Mr. Kanst says that the aquatic plants are as amenable to cultivation as are the terrestrial plants.

A special stage is that of the semi-apes. Probably man's ancestors among the semi-apes closely resembled the existing femurs, and, like these, led a quiet life climbing trees.

These are immediately followed by the true apes, or simians. It has long been beyond doubt that of all animals the apes are in all respects the most nearly allied to man. Just as on the one side the lowest apes approach very near to lemurs, so on the other side do the highest apes most closely resemble man.

The difference between man and the highest form of apes, the gorilla, is slighter than between the gorilla and

the baboon. Below even the baboon, the oldest parent form of the whole ape group must certainly have been thickly covered with hair, and was, in fact, a tailed ape.

It is, after all, some satisfaction to know that a thousand million years may have been consumed in this evolution of man.

The heron seldom flaps his wings at a rate less than 120 to 150 times a minute. This is counting the downward strokes only, so that the bird's wings really make from 240 to 300 distinct movements a minute.

JOHNNY APPLESEED.

JOHNNY APPLESEED, by which name Jonathan Chapman was known in every log cabin from the Ohio river to the northern lakes, is an interesting character to remember. Barefooted, and with scanty clothing, he traversed the wilderness for many years, planting appleseeds in the most favorable locations. His self-sacrificing life made him a favorite with the frontier settlers—men, women, and especially children; even the savages treated him with kindness, and the rattlesnakes, it was said, hesitated to bite him. "During the war of 1812, when the frontier settlers were tortured and slaughtered by the savage allies of Great Britain, Johnny Appleseed continued his wanderings, and was never harmed by the roving bands of hostile Indians. On many occasions the impunity with which he ranged the country enabled him to give the settlers warning of approaching danger, in time to allow them to take refuge in their block-houses before the savages could attack them. An informant refers to one of these instances, when the news of Hull's surrender came like a thunderbolt upon the frontier. Large bands of Indians and British were destroying everything before them, and murdering defenseless women and children, and even the block-houses were not always a sufficient protection. At this time Johnny traveled day and night, warning the people of the impending danger. He visited every cabin and delivered this message; 'The Spirit of the Lord is upon me, and He hath anointed me to blow the trumpet in the wilderness, and sound an alarm in the forest; for behold, the tribes of the heathen are round about your doors, and a devouring flame followeth after

them!' The aged man who narrated this incident said that he could feel even then the thrill that was caused by this prophetic announcement of the wild-looking herald of danger, who aroused the family on a bright moonlight midnight with his piercing cry. Refusing all offers of food, and denying himself a moment's rest, he traversed the borders day and night until he had warned every settler of the impending peril. Johnny also served as colporteur, systematically leaving with the settlers chapters of certain religious books, and calling for them afterward; and was the first to engage in the work of protecting dumb brutes. He believed it a sin to kill any creature for food. No Brahman could be more concerned for the preservation of insect life, and the only occasion on which he destroyed a venomous reptile was a source of long regret, to which he could never refer without manifesting sadness. He had selected a suitable place for planting appleseeds on a small prairie, and in order to prepare the ground, he was mowing the long grass, when he was bitten by a rattlesnake. In describing the event he sighed heavily, and said, 'Poor fellow, he only just touched me, when I, in the heat of my ungodly passion, put the heel of my scythe in him, and went away. Some time afterward I went back, and there lay the poor fellow, dead!'"

"He was a man after all." Hawthorne might have exclaimed of him, too, "his Maker's own truest image, a philanthropic man! not that steel engine of the devil's contrivance—a philanthropist!"—*A. P. Russell's Library Notes.*

Robins in the tree-tops,
Blossoms in the grass;
Green things a-growing
Everywhere you pass;
Sudden little breezes,
Showers of silver dew;

Black bough and bent twig
Budding out anew;
Pine tree and willow tree,
Fringed elm and larch,
Don't you think that May-time's
Pleasanter than March?

—*T. B. Aldrich.*

RING-NECKED DOVE.

(*Zenaidura macroura*)

THE popular names for this favorite bird are turtle dove, common dove, and Carolina dove.

It is an inhabitant of all of temperate North America to a little north of the United States boundary, south through Mexico and Central America to the Isthmus of Panama, Cuba, Jamaica, and some other West Indian islands. The species have even been known to winter as far north as Canada, Mr. John J. Morley, of Windsor, Ontario, informing Professor Baird

that he had seen considerable numbers near that place on the 6th of December, 1878, and that he had on other occasions seen it in various places, from three to twelve at a time. It is a common summer resident in Illinois. The majority arrive the last of March or first of April, and depart by the middle of October. In many places it becomes partly domesticated, breeding in the trees in the yard and showing but little fear when approached.

THE RING-NECKED DOVE.

All day throughout the sunny sky,
All other sounds above,
As, breathing sweet tranquillity,
Sweet voices of the dove
Have rung the oft-recurring note,
A constant vow of love.

Thus its dear mate to ever cheer,
As, still together, near they fly,
A distant echo, faint, yet clear,
Quick falling now so strangely near
When sunshine gladdens earth and
sky.

But cold doth blow the dreary
wind,
Or clouds arise, and float above,
With shadows darkening light of day;
No echo then from greeting love,
But, deep in quiet nest secure,
For sunshine's cheer awaits the dove.

Oh, dove! Oh, love! forever bright,
Like sunny skies your life appears,
And songs of joy your hearts delight.
If storms or shadows dark affright,
My love endures and conquers fears!

SOME EARLY RISERS.

An ornithologist, having investigated the question of at what hour in summer the commonest small birds wake and sing, says the greenfinch is the earliest riser, as it pipes as early as 1:30 in the morning, the blackcap beginning at about 2:30. It is nearly 4:00 o'clock, and the sun is well above the horizon before the first real songster appears in the person of the blackbird. He is heard a half an hour before the

thrush, and the chirp of the robin begins about the same length of time before that of the wren. The house sparrow and the tomtit occupy the last place in the list. This investigation has ruined the lark's reputation for early rising. That much-celebrated bird is quite a sluggard, as it does not rise until long after the chaffinches, linnets, and a number of hedgerow birds have been up and about.

THE YOUNG NATURALIST.

TESTING THE CLEANNESST OF THE AIR.—Professor Dewar has recently devised a new method of testing the contamination of the air. A short time ago he exhibited before the Royal Institution two samples of liquid air in glass tubes—one was made from air which had been washed to purify it from dust, soot, carbonic acid and other impurities. This, when condensed, was a pale blue liquid. The other sample was made by condensing the air of the lecture-room in which the audience was assembled, and was an opaque, blackish fluid, resembling soup in appearance.

THEIR WONDERFUL EYES.—When a fly comes from an egg, one of a family of thousands, it is soft, pulpy, white, eyeless, legless. When mature it affords the student one of the most marvelous fields in all nature, with its nerve clusters and brain, its feet like the hoofs of a rhinoceros, a thousand hollow hairs on each footpad, the wings, which make 15,000 vibrations a second, and the eyes. There are 8,000 of these, each a perfect lens.

A fly's eyes are hard, immovable and retain their form after death. As a fly cannot turn its head it has eyes in all directions. So small are these eyes that 1,000,000 would not cover the surface of a square inch. Each eye measures a thousandth part of an inch and the color is almost always red.

Each of these eyes is a lens and photographs have been taken through them. The lenses are of varying kinds—some suitable for looking off at a distance, others for things close at hand. Occasionally with his thousand eyes a fly is deceived. This is evidenced when a blue-bottle inside a room heads for the open country. He does not see the window glass and the thump with which he strikes and the angry buzz which shows his discomfiture show how mistaken he was.

To prove there is nothing extraordinary in a fly's having 8,000 eyes it is known that a certain beetle owns 50,016

eyes; a certain butterfly 34,710, a common dragonfly 25,088, and a silkworm moth 12,500.

NOTES ON ANIMALS.—The insect effects its breathing, not as men and animals do, by the lungs, but through openings in all sides of the body. It has an intricate system of tubes running through all parts of its person, through which the air is brought in contact with the legs, wings, and so on. These tubes are each protected by delicate membranes. In the fly there exist certain air pouches in addition to the tubes, which serve as reservoirs of air.

It is generally supposed that instinct unerringly teaches birds and insects the best way in which to build their homes or nests, and also to provide for their offspring. The following incident, recently under personal observation, will show that instinct is not always infallible, says the *Scientific American*: "A friend placed three small empty vials in an open box on a shelf, in an upright position in close contact, and they were uncorked. A short time afterward it was a matter of surprise to find that these had been appropriated by a female mud wasp. She had placed a goodly number of spiders in the center vial, doubtless intended to serve as food for her future brood; then proceeded to deposit her eggs in those on either side. She next closed tightly the mouths of all three receptacles with a hard lime cement. Having finished her work, she then doubtless went on her way, satisfied all had been done for her offspring that a thoughtful mother could do. But just think of the sensations of those little wasps when they come into existence, for, while starving in their sealed cages, they can plainly see, through the impenetrable glass walls, the bountiful supply of food which was provided for their use.

It has been supposed that the swallow is more rapid in its flight than almost any winged creature, but the dragonfly easily outwings it. An ob-

server of insect life relates an account of a chase between a swallow and an immense dragonfly, in which the contest lasted a long time. The swallow evidently had hopes of catching the insect, but finally, after a long campaign, gave it up and let the fly escape. It has been claimed that the dragonfly was such a voracious devourer of mosquitoes that these small pests were thrown into a panic if a dragonfly approached them. It was declared that a fly confined in a room would speedily clear it of mosquitoes, but repeated experiments failed to substantiate this claim.

The dragonfly possesses the unique faculty among winged creatures, birds or insects, of flying backwards and forwards and sideways without turning its body. There are very few insects that the swallow, with its marvelous speed and dexterity, cannot catch, but the dragonfly is one them. The dragonfly without any apparent trouble, will keep a few feet ahead of a swallow for half an hour at a stretch, and no matter how swiftly the swallow flies, the dragonfly is never just there when it makes its swoop. This is because the swallow has to turn its body, while the dragonfly only reverses its wings.

The investigations of Professor Weismann have done more to solve the problem, "How death came into the world" than those of any other living man. It is generally assumed that death is associated with all forms of life, but this is not really the case. The lower forms of life, for example, may be said to have a perpetual existence, and not to be subject to death; for in unicellular reproduction life is practically endless. In the case of higher forms of life death is universal, and for a very natural reason. The aim of nature is the perpetuation of the species, not of the individual, and when creatures have, as in the case of certain insects, reproduced themselves once for all, they have no further need of existence. Creatures that nurse their young, like mammals, and produce them slowly, have need of longer life, or the species would speedily be

exterminated; but there is no reason why the individual, having performed its duty in relation to the species, should continue to exist, since its existence then becomes a superfluity. Between multicellular and unicellular existence there is, therefore, the marked difference that, whereas the former dies when it has reproduced itself and so perpetuated its species, the latter goes on perpetually reproducing itself—one cell growing out of another without cessation. To Weismann we owe the knowledge of how it is that death intervenes when multicellular existence develops from unicellular. The change is effected by the differentiation of the individual—or somatic—and the reproductive cells. The former have lost the power of multiplication and reproduction, and consequently died, while the latter have preserved it.

The most curious of all objects in New Zealand is that which the Maoris call "aweto." One is uncertain whether to call it an animal or a plant. In the first stages of its existence it is simply a caterpillar about three or four inches in length, and always found in connection with the rata tree, a kind of flowering myrtle. It appears that when it reaches full growth it buries itself two or three inches under ground, where, instead of undergoing the ordinary chrysalis process, it becomes gradually transformed into a plant, which exactly fills the body, and shoots up at the neck to a height of eight or ten inches. This plant resembles in appearance a diminutive bulrush; and the two, animal and plant, are always found inseparable. One is apt to relegate it to the domain of imagination, among dragons and mermaids; but then its existence and nature have been accepted by the late Frank Buckland. How it propagates its species is a mystery. One traveler, after describing its dual nature, calmly states that it is the grub of the night butterfly. If so, then the grub must also become a butterfly, or what becomes of the species? One would be ready to suppose that the grub does really so, and that some fungus finds the cast-off

slough congenial quarters for its growth. But as far as present observation goes the grub never becomes a butterfly, but is changed in every case into a plant.

A TAME TARANTULA.—A half-breed boy of Mexican and Indian blood recently attracted much attention at Winslow, Ariz., by the performances of an educated tarantula he owns. He carries the big, formidable-looking insect in a large wooden box slung about his neck, which, when exhibiting his pet, he places on the ground as a sort of stage. At the command of its master the tarantula mounted a small ladder, rung a bell and performed on a miniature trapeze. Then to the thumping of a tambourine in the hands of the boy, it proceeded to revolve slowly about as if waltzing, and when it had finished saluted the crowd by lifting one leg three times.

After its performance was over, it crawled to its master's shoulder, where it sat, occasionally running round his

neck or down into his bosom. The boy says he tamed the spider when it was young, first by feeding it every day until it grew accustomed to him, then gradually taught it the tricks it knows. He declares that it is much more intelligent than any dog, and very tractable, though uncompromising in its enmity to any one but himself. It is as large as a silver dollar when curled up, though its legs are two or three inches long.

The body is an ugly, dull brown, covered with short, coarse, black hair, which also covers the limbs, but is very sparse and bristly. The eyes are small and gleam like diamond points, while the mouth is furnished with slender, overlapping fangs. The power of spring in these creatures is said to be something incredible, a leap of ten feet being no tremendous exertion. The boy, who owns the only one which has ever made friends with any other living creature, is from the Magallon mountains.

A story is told by George W. Griffin, of Henderson county, of a shepherd dog owned by him, which certainly demonstrates the superior instinct of this little woolly creature over most species of the canine family. "One day," said that gentleman, "I was driving along the public highway, and the dog was following me. I stopped to talk to some friends that I met, and while conversing with them unknowingly dropped my watch from my vest pocket. The watch had a short piece of leather attached to it, which answered for a fob. As soon as the chat ended I got into my buggy, and drove on. I had driven half a mile or more, when, to my astonishment, I no-

ticed the dog was trotting along close behind the vehicle with the watch hanging from his mouth by the leather strap, which he held firmly between his teeth. Of course, I made haste to stop, and get out of the buggy. As I did so the dog came up to me wagging his tail, seemingly conscious and proud of what he had done. This, though, is just one of the many intelligent acts to that little animal's credit."—*Louisville Post*.

When a dog barks at night in Japan the owner is arrested, and sentenced to work for a year for the neighbors whose slumbers may have been disturbed.

OPOSSUM.

(*Didelphys virginiana*.)

SHAW.

THE opossum is the only member of its order, the *Marsupialia*, which inhabits North America, says Mr. Chas. Hallock, one of the leading naturalists in the United States. It is confined to the southern portion, its range not reaching much north of the Ohio River on the west, or New Jersey on the east. It is probably never found east of the Hudson River.

This animal is about twenty inches long to the root of the tail, which appendage is fifteen inches in length. The color is pale grayish, the hair being nearly white with brown tips. The tail is nearly naked, and is prehensile; and the general aspect of the creature is rat-like.

"It is with a certain feeling of sadness that we chronicle the dying out, one by one, of old customs and habits. Each year old usages give place to new, and the change certainly in very many cases is not for the better.

"The opossum can hardly be classed among the game animals of America, yet its pursuit in the South in old plantation days used to afford the staple amusement for the dusky toilers of the cotton states. It was the custom in ante-bellum times, as often as the revolving year brought round the late fall days with their ripened fruit and golden grain, for the dark population of the plantation, occasionally accompanied by young 'massa,' to have a grand 'possum hunt *a la mode*. This custom, through desuetude, and change of circumstances, has been well-nigh consigned to oblivion.

"Its food, upon which it becomes fat and toothsome to the dusky palate, is persimmons and wild grapes, together with the various berries and fruits that abound in the Southern states. After the first hoar frost has whitened the hills the 'possum is most eagerly sought for by Cæsar, Pluto and Mars. At night the darkies start forth *en masse*, armed to the teeth with every available weap-

on, and accompanied by a number of nondescript dogs, generally well trained for 'possum or coon hunting.

"These dogs have some hound blood in their composition, and understand the requirements of the occasion perfectly. Some ancient shade of Dis with snowy hair is selected as leader, and he controls the dogs and manipulates the horn. The favorite haunts of the "varmint" are familiar to the negroes, and the "meet" is generally held on the borders of the swamp, where persimmons abound, or, if the moon shine too brightly for the game to venture far from cover, in the darker vales where the the luscious grapes run wild and plenty.

"The dogs range far from the party, and the moment one of them strikes the "trail ob an ole 'possum" he gives the signal note to the expectant party by a short yelp. This sets the sable hunters wild with excitement; they listen for the second sound, sure to come, which will betoken that the varmint is treed. They are not long kept in suspense, for faint, away down in the valley, comes the joyful bay, and at the signal the whole party stampede, spite of all 'ole uncle Cæsar's' attempts to restrain them, and rush pellmell through bush and brake in the direction of the sound. They arrive panting and breathless from the wild race, in twos and threes, and are soon all assembled at the foot of a small sapling, in the branches of which the 'possum has taken temporary refuge from his pursuers.

"Soon a nimble young buck shins the tree, and the marsupial is shaken off after some difficulty, for he clings with the utmost tenacity to the limb, using the tail not the least in this battle for freedom. The anxious dogs below await his fall, and his death is compassed in less time than it takes to tell it. This is the only method employed in the capture of the opossum, and this is rapidly becoming traditional."



FROM COLL. CH. ACAD. SCIENCES.

OPOSSUM.
 $\frac{1}{8}$ Life-size.

COPYRIGHT 1900, BY
A. W. HUMPHREY, CHICAGO

SOMETHING ABOUT DOGS.

BLENHEIM or Marlborough spaniels, which greatly resemble the latter in form and general appearance, get their English name from Blenheim Palace, in Oxfordshire, where the breed has been preserved since the beginning of the eighteenth century.

Mastiff is the term applied to a very large and powerful species of the canine family, and there is considerable conflict of opinion regarding the origin of the word. Some claim that it is derived from the Italian *mastino*, or the French *mastin*, both of which signify large-limbed.

This word, they say, was gradually corrupted into masty, a Lincolnshire expression, meaning very large, muscular, or big, until it gradually assumed its present form. Others, again, say its true origin is the old German *masten*, to fatten, because the mastiff is a large dog, and seems better fed than any other.

These animals were very highly prized by the early Romans, who matched them to fight in the arena with wild animals. It is related that very often two or three mastiffs defeated a lion in such combats.

Poodle is derived from the German *pudel*, a puddle or pool. This dog was originally German, and the name was probably given it because of being very closely allied to what is known as the water dog. They are without doubt the most intelligent of all canines.

The shepherd dog—called collie in Scotland, from the Gaelic *cuilan* or puppy—gains its title from the fact of its being used to watch sheep, and protect them from marauders of every description.

As to the derivation of the word bull-dog, it is only necessary to state that this species was exclusively used in bull-baiting, and from that circumstance arose the name by which it is universally known. A cross between this and the terrier is appropriately termed the bull-terrier.

The Alaskan dog is almost human in

intelligence. He weighs about 100 pounds. Heavily laden, he will travel sixty miles a day, says the *St. Paul Dispatch*. With twenty dogs in a team, no two of them are in a straight line from the driver. When unhitched for the night they pile upon the first blanket that is thrown upon the snow, and there they stay. When you crawl into your sleeping bag, and pull a robe over it, the dog will get under the robe. Unless you are careful he will be inside of the bag in the morning. The animal's endurance is phenomenal, and they are capable of strong affection. They are great fighters. A traveler who recently returned from Alaska says of the treatment accorded these faithful animals: "The whip that is used on them is the cruellest thing of its kind that is known to man. Thirty feet in length, and two inches thick near the short handle, it has a lash ten feet long that cuts like a knife. The Russian knout isn't to be compared to it. When a dog is struck you hear a sharp yelp, and then your sleigh whirls past a bit of fur or possibly a piece of bloody skin lying on the snow."

Recently a little girl named Lillian could not be found. It was early in the afternoon when she was missed. There was great excitement, for it was feared the little girl had been stolen, or fallen into the river not far away. Searchers were sent in every direction, but there was no trace of the little girl even when night came. Among the most earnest searchers was Lillian's pet dog, Rover. He ran about with his nose to the ground hunting everywhere. When night came lanterns were lighted, and the people still looked for, and hoped they would find, Lillian.

Rover had come back to the house, and in some way he went down an unused stairway. At its foot was a window that opened into a small room that had not been used in a long time. Rover gave three sharp barks, and the little girl's grandfather hurried to the part of the house where the dog was.

When Rover saw him he barked more sharply, and sprang at the window, in front of which was a chair. The chair was moved, and there sat the little

girl, just waked up. She had gone into this room to play house, and had fallen asleep. Rover is the hero now in that family.

EASY LESSONS IN EVOLUTION.

WITH the growing popularity of South Kensington Museum the directors and curators of its priceless collections have increased their efforts to adapt some of the accumulated store of knowledge which those collections represent to popular comprehension. The results of this activity have of late become manifest, both in the great Central Hall, and in the incomparable collection of British birds. The birds, which have been for many years a dull assemblage of specimens, all stuffed alike, and bearing an unnatural common resemblance to one another, are being rearranged in cases with a proper environment of rocks and shrub, sandhill or marsh; and with a skillful and successful attempt to display them in their habitat as they live.

The work is not nearly complete; it will hardly be so for two years to come; but already some of the cases, especially those of the solan geese, the eagles, the cormorants, and the almost vanished British bustard, are most interesting and beautiful object lessons in natural history. A lesson of a different kind is being begun in the Central Hall. During the period of Sir William Flower's directorship a number of specimens of canaries, pigeons, and domestic fowl were collected, and it was sought to show by means of these the variations which breeding might produce on a single type. Two cases of these specimens now stand in the Central Hall. On the top of the "pigeon exhibit" is the common rock pigeon. Below him, tier upon tier, are ranged the carriers, tumblers, pouters—the thirty odd breeds which fanciers have produced from the original ancestors. Many of these

specimens were prize-winners in their day.

The same distinction appertains to the twenty or thirty varieties of canary, which are in an adjoining case, and which are the descendants of some ancestors whose little wings were not bright yellow at all, but a dull brownish green. The domestic fowl in the same case are intended to exhibit similar artificial peculiarities, though it should be noted that the nine-feet-long tails of the Japanese bantam are not so much the result of breeding as of eccentric cultivation, for the unfortunate bird's feathers are carefully trained in this way throughout the whole of an uncomfortable life. But the lesson in evolution which these cases seek to convey is to be carried out on a much larger scale. At the further end of the Central Hall are to be ranged a number of specimens of dogs, cows, goats, horses, cats, every species, in fact, of which mankind has produced definite breeds. Even fish, bees, silk-moths, and the greatly modified native oyster will find representation here. The nucleus of the dog collection has already been formed, and includes a mastiff of the old English breed, heads of the Irish wolf hound, Danish and French mastiffs, Russian and Mexican lap dogs, remarkable for their smallness, and Fullerton, the famous coursing greyhound. Numerous skulls, and several mummied dogs, given by Professor Flinders Petrie, will add to the interest of this collection. The authorities hope that persons who lose pure-bred or prize animals by death will present their bodies to the museum in order that they may be added to this extremely interesting display.

THE CECROPIA MOTH.

REST H. METCALF.

THE cecropia, a lepidopterous insect of the family *Bombycida*, is the largest and most beautiful of our American moths. It is quite generally distributed throughout the United States.

The large wings, measuring from five to six inches, are covered with dusky brown scales, the borders richly variegated and beautifully marked, the anterior ones having near the tops a dark spot resembling an eye, and both pairs of wings having kidney-shaped red spots.

The caterpillar or larva is nearly as beautiful in color as the perfect moth, being about three inches long, of a light green color with coral red, yellow and blue warts with short black bristles near its head. It feeds on the leaves of nearly every species of forest fruit and shade trees, till late in August or September; then it descends from the trees to seek some shrub upon which to fasten its winter home. Occasionally they will be satisfied with a location in a tree-top, but not often.

This home building is exceedingly interesting, and although you can watch them only for a few hours you still linger near and imagine what you cannot see.

When the right location is found it spins a very strong thread for the outside, fastening it securely to a small branch, and going back and forth with this strong silk until it assumes its proper shape and proportion. You will find it almost impossible to tear it open with your fingers, and only a sharp knife will enable you to see the contents. This strong outside is necessary for protection, as the woodpeckers are very fond of the larva and imago. After this strong outside is completed

the silk is woven very loosely between it and the cocoon proper. This serves as a blanket for warmth, so that the baby moth is as safe from severe winter cold and storms as a baby child in its cradle.

The inner room of this home or the cocoon proper is made of very fine silk, which can be readily reeled off, and we are told that it has been carded and spun and knit into stockings that washed like linen, and that cloth woven from this silk is much more durable than that made by the silk worm.

But for the delicate character of the larvæ, which are very difficult to raise, it would become an important article of commerce.

The inside of this cocoon is as smooth as satin and the larva after changing to the proper state is glossy black, from one and a half inches to two inches in length. As the time draws near for the great change to the beautiful moth, the pupa grows very soft and, moistening the smaller end of the cocoon with a secretion prepared for this use, comes forth with damp, small wings, which as they dry out develop into the regular size of the beautiful moth, leaving a round hole in the cocoon where both the outer and inner cocoon were woven less closely and strong than any other portion.

In New England the cecropia may be found in the month of June.

Often the larva uses a leaf in forming the outside, and after a leaf dies and is blown away the impress of the veins remains, making such a pretty cocoon. You can easily find them during the winter months, when the trees are bare, if you keep a sharp watch for them.

THE GENISTA.

PROFESSOR WILLIAM KERR HIGLEY,
Secretary of The Chicago Academy of Sciences.

The green earth sends its incense up
From every mountain-shrine,
From every flower and dewy cup
That greeteth the sunshine.

—Whittier.

THE more one studies plant life with reference to its structure, its mode of growth, its uses and the changes which may be wrought by man to adapt it to the requirements of his taste, the more one finds it impossible to repress the words—Wonderful! Beautiful! For there is no plant so insignificant as not to have something attractive about it.

The countries adjacent to the Mediterranean Sea and the Indian Ocean produce a profusion of forms noted alike for their beauty and economic value.

In this region, with about forty-five sister species, is found the plant of our illustration. Carried from its home, it is now a common decoration of the greenhouse and private conservatory. Its sisters are of economic value. Some are used for garden hedges, some to arrest the ever drifting sands of the seashore, and some to furnish a tanning principle. Cattle browse upon some species and all contain more or less of a yellow dye called *scoparin*.

These plants belong to the pea or pulse family (*Leguminosæ*), which also includes the clovers, the peanut, the locusts, the vetches, the acacias, the bean, the lupine, the tamarind, logwood, and licorice.

It has been estimated that this family contains over four hundred and sixty genera and about seven thousand species. Here are grouped herbs, shrubs, vines, and trees, the fruit of which is a pod similar in structure to that of the bean, and usually with irregular flowers. In this family the beasts of the field, as well as man, find some of their most valuable foods and nearly all of the species are without harmful qualities. The name of the family is derived from the Latin word *legumen*, meaning *pulse*.

The flowers of this group of plants are peculiarly adapted to cross-fertilization. Their colors, their odors, or the abundant nectar secreted by them attract numerous insects, and, while these little animals are providing for themselves Nature has also provided for the best interests of the plant, as the pollen scattered upon their bodies during their visit to a flower, is carried to another flower of like kind, thus causing a cross between the two plants, which results in a better grade of seeds.

The botanical name of the genista in the illustration is *Cytisus canariensis*, a native of the Canary Islands. The origin of the generic name, *Cytisus*, is obscure, though it is generally considered to be the ancient Greek name of the plant, and has its origin in the fact that the first species was discovered on the island of Cythrus, one of the Cyclades, a group of islands south of Greece. The specific name is derived from the name of the island where the plant is native.

The pure yellow flowers are grouped along the branches in terminal clusters. They are sweet-scented, showy and frequently so numerous as to make the plant appear like a mass of yellow blooms.

The leaves are very small, consisting of three leaflets similar in form to those of the common clove. The surface of the leaves, and of the young twigs, is covered by fine and soft hairs, causing a hoary appearance.

The plant is a shrub varying in height from a few inches to that of a man. It bears numerous and crowded branches.

Some of the other species of this interesting genus of plants bear purple or white flowers, and some obtain the stature of trees.



WHERE VEGETABLES CAME FROM.

THE customer at a Lewiston market was in a reflective mood Saturday morning and would talk.

"How many of your customers know anything about what they eat?" said he.

"They ought to," said the blue frock, "they buy it and they order it."

"I don't mean that," was the reply. "Of course they know what they eat, but who of them know anything about the stuff? Take vegetables, for instance."

"Oh, lots of 'em know," said the market man. "Here's potatoes, for instance. They are native Americans. I guess Sir Walter Raleigh introduced them to Europe."

"I guess he never ate one, for in his time they were not considered fit to eat. They went to Europe from the hills of South America and a strange matter of fact, when you come to think of it, is that in the United States, where, barring a few sections, vegetables grow in greater abundance and beauty than any other part of the world, none save maize and the ground artichokes are native products."

"Nonsense!" ejaculated the amazed marketman.

"No nonsense about it," continued the contemplative customer. "Europe, Asia, Africa and South America are all more richly endowed than we. I used to think the watermelon was ours, but, bless you! the north African tribes grew the big, juicy fellows and gave us our first seeds. As to the muskmelon, it is a vegetable of such lineage that, like the cabbage and lettuce, nobody knows just who were their first wild progenitors. The melon, at any rate, came out of Persia as a developed table delicacy, while the Adam of the cabbage family is agreed by botanists to have flourished way back there in Central Asia, where they say the Caucasian race came from. The Romans ate cabbage salad, and, according to count, there are nearly as many varieties of this sturdy old green goods as there are different races of men.

"There is another Roman delicacy,"

continued the customer, pointing to a box of beets. "They do say that the Greek philosophers thought a dish of boiled beets, served up with salt and oil, a great aid to mental exercise. For my part, though, I don't know a vegetable that should be prouder of its family history than the radish. Radishes came from China, but a scientific journal the other day announced the discovery from a translation of Egyptian hieroglyphics that Pharaoh fed his pyramid builders on radishes. He even went so far as to spend 1,900 silver talents in order to regale his masons with the crisp and spicy root. Again, if you read the Old Testament carefully, you will be sure to come across the announcement that in Egypt the children of Israel ate melons, beets, onions and garlic, and, evidently, in traveling through the wilderness, Moses had a great deal of difficulty in persuading them to cease yearning after these Egyptian dainties.

"Besides the melons and peaches and geraniums," continued the garrulous customer, "for all of which we have to thank productive Persia, water cress comes from her valleys and brooks and she taught the world how to grow and head lettuce. However, the Roman gourmards, who adopted both these salads, ate green peas and string beans that their gardeners found growing in France and South Germany, and cucumbers were as popular with them as with the Jews and Egyptians.

"To Arabia honor is due for the burr artichoke. They ate it for liver difficulties—and, as a matter of fact, there is no vegetable so good for men and women who lead a sedentary life, just as carrots, that grew first in Belgium, are an admirable tonic for the complexion, spinach for the blood, potatoes for the hair, and celery for the nerves. Rhubarb, they say, was never known until the fifteenth century, when the Russians found it on the banks of the Volga, and, if you will believe it, the only European people who appreciate the eggplant as we do are the Turks. North Africa first produced

this vegetable; in France it is eaten raw often as not and in obstinate England they use it for decoration. However, the potato had to make a desperate struggle for popularity and for nearly a century, after it was imported and grown in Europe nobody could be persuaded to touch it. Finally Parmentier gave it a boom that in two

centuries has not in the least diminished, and twice this little tuber has saved Europe from what promised to be a cruel famine." Whereupon the customer hurried off down the street, leaving the green-grocer staring at his stock of truck with a refreshing expression of pride and interest.

BIRDS AND FARMERS.

IF IT were customary, says a contemporary, to list such matters after the manner of stock reports, the pages of the daily papers in these days, suggestive of approaching spring, would contain two quotations something like these: "Millinery active," "Audubons aggressive."

During the cold winter months just passed, while its bird friends were in the South, the Illinois Audubon Society has been working to the end that the women who will flock to the "spring millinery openings" already heralded shall with resolute faces pass by the dainty feather-decked creations, and purchase only those which are flower-crowned or ribbon-decked. The directors of the bird protective society have issued within a day or two a pamphlet compiled by William Dutcher, treasurer of the American Ornithologists' Union. It will be sent to all the farmers' institutes, and to individual husbandmen by the hundreds, for the society believes, after having tried many means of teaching the bird-preservation lesson, that the best way to get at the milliners and the women is through the agriculturists. The

more enthusiastic Audubonites declare than when the farmers read Mr. Dutcher's leaflet they will rise in mass and demand that bird killing for millinery or any other purpose be stopped. The husbandmen have a yearly crop interest of nearly three billion dollars. The total capital invested in the millinery trade is only twenty-five millions. Mr. Dutcher says that agriculture loses two hundred million every year because of the attacks of injurious insects. As the birds diminish in number, the loss increases, a fact which he declares is proved beyond a peradventure. A difference of only one per cent in the value of the farm products means a loss equal to the value of the millinery trade of the country. As a matter of fact, the farmer is the man who is paying the greater part of the millinery bills of the land.

The Audubon Society, after three years of active work, has come to the conclusion that appeals to the sympathies, and the humane feelings of men and women, are not so potent as are plain statements of facts which show how the pocketbook is touched.

FISH HAVE FAVORITE HAUNTS.

ONE strange feature of this sea life of the tropics is the regular recurrence of migratory swarms of fish of very small size that return in huge numbers year after year with such absolute regularity that the natives calculate on the event on a certain date in each year and even within an hour or two of the day, says a writer in *Lippincott's Magazine*. One such swarm of fish forms the occasion of an annual holiday and feast at Samoa. The fish is not unlike the whitebait for which the English Thames has so long been celebrated and each year it arrives in Samoa on the same day in the month of October, remains for a day, or at the most two days and then disappears entirely until the same day the following year. Why it comes, or whence, no curious naturalist has yet discovered, nor has anybody traced its onward course when it leaves the Samoan group, but the fact is unquestionable that suddenly, without notice, the still waters of the lagoon which surround each island within the fringing reef become alive with millions of fishes, passing through them for a single day and night and then disap-

pearing for a year as though they had never come.

A visit to Samoa enabled me to see this strange phenomenon for myself and to witness the native feast by which it is celebrated year by year. I had been in Samoa for a month and in that month I had enjoyed almost a surfeit of beauty. I had coasted the shores of its islands, I had bathed in the warm, still waters of its lagoons, fringed to seaward by the white reef, on which the ocean broke in golden spray, and to landward by the silver beach of coral sand, flecked with the tremulous shadows of the swaying palms. I had climbed with my native guide the abrupt hills, covered with dense forests of tropical luxuriance, through the arcades of which I caught glimpses of the flash and luster of the ocean's myriad smiles, and again we had plunged into deep valleys among the hills, where little headlong streams murmur under the shade of the widespreading bread-fruit trees and wave the broad leaves of the great water lilies of the Pacific coast islands. This visit of the fishes came as a climax of wonders.

SILLIEST BIRD IN THE WORLD.

DODO is the Portuguese name for simpleton, and it is given to the silliest bird that ever lived.

Three hundred years ago, when the Portuguese first visited the Island of Mauritius, they found a great number of these birds. They were about the size of a large swan, blackish gray in color and having only a bunch of feathers in place of a tail, and little, useless wings. More stupid and foolish birds could not be imagined. They ran about making a silly, hissing noise like a goose, and the sailors easily knocked them over with their paddles.

They couldn't fly, they couldn't swim, they couldn't run at any great speed, and as for fighting, they were the greatest cowards in the world. They were much too stupid to build a nest, and so they dropped an egg in the grass and went off and let it hatch as best it could. Added to all these things its flesh was fairly good to eat, and the Portuguese pursued it so steadily for food that in less than a century's time there wasn't a single dodo left in the world. It was quite too silly and stupid to save its own life, and so it became extinct.

THYME.

(*Thymus Serpyllum L.*)

DR. ALBERT SCHNEIDER,
Northwestern University School of Pharmacy.

But, if a pinching winter thou foresee,
And wouldst preserve thy famished family,
With fragrant thyme the city fumigate.

—*Virgil, Georgics, (Dryden), IV., 350.*

THE field or wild thyme (*Thymus serpyllum*) is a small, much-branched shrub, about one foot high, with rather slender quadrangular, purplish, pubescent stems. Leaves small, opposite, sessile. Flowers numerous, in clusters in the axils of the upper leaves. Corolla purplish, irregular; calyx green and persistent. The plant is propagated by means of underground stems. It is far from being a showy plant.

This plant is closely related to the garden thyme (*T. vulgaris, L.*), and grows profusely in meadows, fields and gardens. Both species are very fragrant and it is to this characteristic that they owe their popularity. The ancient Greeks and Romans valued thyme very highly and made use of it as a cosmetic, in medicine and in veterinary practice, much as it is used at the present time. Thyme yields the oil of thyme which is a valuable antiseptic, used as a gargle and mouth wash, for toothache, in dressing wounds and ulcers, also for sprains and bruises, in chronic rheumatism, etc. It finds extensive use in the preparation of perfumes and scented soaps; but its principal use is in veterinary practice. The herb is much used as a flavoring agent in soups and sauces, in fomentations, in baths and in the preparation of scented pillows.

Two kinds of oil of thyme appear upon the market, the red oil and the

white oil. The latter is less aromatic being the product of redistillation. The oil is also known as oil of origanum.

Although thyme is an insignificant plant as far as appearances are concerned it has been sung by many poets. In Shakespeare's "Midsummer Night's Dream" Oberon, the king of the fairies, says to Robin Goodfellow;

"I know a bank where the wild thyme blows,
Where oxlips and the nodding violet grows,
Quite over-canopied with luscious woodbine,
With sweet musk-roses and with eglantine."

Another reference to thyme is to be found in the beautiful and pathetic story of "The Adopted Child" by Mrs. Hemans. The orphan boy in speaking to the kind lady who has adopted him, says:

"Oh! green is the turf where my brothers
play
Through the long, bright hours of the summer day;
They find the red cup-moss where they
climb,
And they chase the bee o'er the scented
thyme."

DESCRIPTION OF PLATE.—A, plant somewhat reduced; 1, 2, leaves; 3, flower bud; 4, 5, flower; 4, 5, 6, 7, 8, different views of the flower; 9, flower without stamens; 10, stamens; 11, pollen grains; 12, 13, pistil; 14, developing fruit; 15, transverse section of fruit; 16, ripening fruit; 17, 18, 19, seed.

NOTE.—See illustration of *thyme plant* on page 171 marked *digitalis* through error. For description of *digitalis* see page 170.



A CURIOUS SURVIVAL.

ELLA F. MOSBY.

THE tongue of a bird, says Mrs. Olive Thorne Miller, is the tool that shows how he gets his living, as the anvil and hammer tell of the blacksmith's work, the hod of the bricklayer's, and the chisel and plane of the carpenter's. The tongue of the woodpecker is a barbed spear, very adhesive or sticky on its surface. We know at a glance that he uses it to capture insects hiding in the crevices of the bark, and if they are too small to be speared by its sharp point, they will stick to its gluey surface. "The four-tined fork" of the little nuthatch is admirable for catching grubs out of the rough tree-trunk, and the slender tube of the humming-bird's tongue proves him a dainty taster of flower-sweets, though he, too, catches insects, with a *click* of his long, sharp bill as he flies, when flowers are rare. But there is a small bird whose tongue does not tell his own story. His tropical ancestry of many and many a year ago, like the humming-bird, sucked honey from flower-cups and juices from fruits, and so by a very curious survival of structure, this Cape May warbler that feeds on insects now has the tongue cleft at the tip and provided with a fringe like the iridescent and shining sunbird's, the honey-creeper's and flower-pecker's of southern isles. Their tongues, "pencils of delicate filaments," brush the drops of honeyed nectar from the deep tubes of tropic flowers and their sharp, needle-like bills probe the juicy fruits, though, like humming-birds, they add small insects to their bill of fare when necessary.

This peculiarity on the part of the Cape May is the more curious because *all* the warblers, numerous as these are and varying as widely as possible in character, plumage and habits, are alike in one respect—they are insect-eaters. Whether they are ground warblers or haunt river side and stream

or explore trunk, branch, and twig-like creepers, or glean their food from the leaves, or resemble the flycatchers in habit, they live on insects, flies, ants, canker-worms, caterpillars, gnats, the larvæ and eggs of insects; nothing of this sort comes amiss to them. Some warblers seek this food in the tree-tops, and rarely descend; others feed on the ground and build their nests there. Many frequent lower boughs and shrubs, but all seek insects as their prey. A few, it is true, like the eccentric chat and the pretty gold-crowned thrush, who is *not* a thrush after all, in spite of his speckled breast, are very fond of berries. But none retain the honey-sucking habits for which the tube-like and fringed tongues, and keen, needle-like bills, were fashioned.

There is also a queer coincidence between the nest-making of the Cape May warbler and that of the flower-peckers in the Philippines Islands—another curious survival. Mr. John Whitehead, the naturalist and explorer, found a most exquisite rose-colored pouch, which looked as if formed of rose-petals, though it was in fact made of other material. The little honey-sucker had woven it together with the silken threads of a spider's web. Now, the Cape May warbler weaves his partly hanging nest of twigs and grass, and lines it with horsehair in the great fir woods of the north, but he, too, fastens it together *with spider's webbing*.

The Cape May is a rare warbler. Dr. Rives, in his list of Virginia birds, mentions it as "a rare migrant," though Dr. Fisher says it is sometimes comparatively common in the fall near Washington. It was, therefore, a charming surprise when (September, 1899,) I found the Cape Mays our most common migrants at Lynchburg, Va. From September 20 to October 18 our maple-tree was rarely without them. A great

deal of noisy work was going on close by, as the street was being widened and newly paved, but these "tiny scraps of valor," as Emerson calls his friends, the chickadees, showed no timidity or distrust. The colors of the different birds varied widely. One could hardly believe that the adult male Cape May with his striking white on rich olive above, and his tiger-like streaks of glossy black on shining yellow below, his dark cap and chestnut-red ear-patches, belonged to the same family as the immature female. *She* is plain grayish olive above, and has a streaked grayish breast, as sober as a Quaker, save for her yellow rump. The Cape May, the prairie, the myrtle and the magnolia warblers are the four yellow-rumped species—a most convenient mark of distinction.

In character our little visitor showed energy and courage, usually driving off any new-comer, even of his own family, from his feeding-ground. He journeys in mixed crowds, but prefers a table to himself. He even won respect from English sparrows by his pugnacious traits. They generally let him alone, though they attacked the other strangers unmercifully. He explored his tree thoroughly, and with great agility, often spending hours in traveling from bough to bough, twig to twig, up and down our maple, and especially examining the underside of all the leaves within reach. Sometimes on tiptoe he stretched his pretty head to its farthest extent to investigate a dangling leaf above him; sometimes he hung, head

downward, to clean the eggs and larvæ from a leaf below. I have seen him dextrously somersault to a lower bough, or hold on to a slender twig, scolding and pecking alternately, as the wind-tossed him to and fro. Occasionally he sang a little song, rather thin and monotonous, but not unpleasing. It has been compared to the song of the Nashville warbler, and also to that of the black and white creeper.

The cause of his long stay was no doubt the abundance of insects during our warm fall. Swarms of gauzy-winged insects were seen everywhere, wheeling in airy circles in the sun, and sometimes covering the wraps and hats of pedestrians. There were crowds of birds in our parks. One sunny afternoon I watched with interest the likeness between a wood pewee, catching insects in the air, and a flock of Cape May warblers engaged in the same pursuit. But there was a difference; the warbler darted straight out from his magnolia tree, caught his gnat and returned, whether to the same bough I could not see for the leaves were so thick, but probably only near by. The true flycatcher fluttered in an aerial circle, returning to precisely the same perch after capturing his insect.

The tiny fringed and cleft tongues seemed useless in this occupation, but like some parts of the human body for which we have not yet ascertained the present use, they may be invaluable as records of past history under different conditions from those of to-day.

"Look at Nature. She never wearies of saying over her floral pater noster. In the crevices of Cyclopean walls—on the mounds that bury huge cities—in the dust where men lie, dust also—still that sweet prayer and benediction. The 'Amen!' of Nature is always a flower."—*Autocrat*.

The gorse is yellow on the heath,
The banks with speedwell flowers
are gay,
The oaks are budding; and beneath
The hawthorn soon will bear the
wreath,
The silver wreath of May.
—*Charlotte Smith*.

THE RAVEN.

(*Corvus Corax.*)

THIS handsome and truly interesting bird is found in nearly all portions of the globe wherever there are wide expanses of uncultivated ground. It is a solitary bird, living in the wildest places it can find, especially preferring those that are intersected with hills. In such localities it is said the raven reigns supreme, "scarcely the eagle himself daring to contest the supremacy with so powerful, crafty, and strong-beaked a bird."

The raven lives almost entirely on food of an animal nature, and there are few living things which it will not eat when the opportunity is given it. Worms, grubs, caterpillars, and insects of all kinds are swallowed by hundreds, though carrion is its chief diet. Its wings are large and powerful, and its daily range of flight is so extensive that many hundreds of objects pass under its ken, and it is tolerably sure, in the course of the day, to find at least one dead sheep or lamb. So strongly is the desire for attacking wounded or dying animals implanted in the breast of the raven, that, according to Mudie, the best method of attracting one of these birds within gunshot is to lie on the back on some exposed part of a hill with the gun concealed and close at hand. It is needful to remain perfectly quiet, because if there is the slightest sign of life the raven will not approach, for, as Mudie rather quaintly observes, "he is shy of man and of all large animals in nature; because, though glad to find others carrion, or to make carrion of them if he can do it with impunity, he takes good care that none shall make carrion of him." It is needful to watch carefully, and not to be overcome by sleep, as the first intimation of the raven's approach would to a certainty be the loss of an eye.

The tongue of the raven is rather curiously formed, being broad, flat, covered with a horny kind of shield, and deeply cleft at the extremity. At the root are four rather large projections or spines, the points being directed

backward. The use of the spines is not known.

The cunning of the raven is proverbial, and many anecdotes are told of its intellectual powers. Charles Dickens in "Barnaby Rudge" has made of it an interesting character, which is by no means overdrawn. From the mass of these stories we will select one which is not generally known:

"One of these birds struck up a great friendship for a terrier belonging to the landlord of an inn, and carried his friendship so far as to accompany his ally in little hunting-expeditions. In these affairs the two comrades used to kill an astonishing number of hares, rabbits, and other game, each taking his own share of the work. As soon as they came to a covert, the raven would station himself outside, while the dog would enter the covert and drive out the hares from their concealment, taking care to send them in the direction of the watchful bird. On his part the raven always posted himself close to one of the outlets, and as soon as any living creature passed within reach, he would pounce upon it, and either destroy it at once or wait until the dog came to his assistance, when by their united efforts the prey was soon killed. Rat-hunting was a favorite sport of these strange allies, and it was said by those who witnessed their proceedings that the raven was even more useful than a ferret would have been."

Captain McClure, the Arctic voyager, says that the raven is the hardest of the feathered tribe, and even in the depths of winter, when wine freezes within a yard of the fire, the bird may be seen winging his way through the icy atmosphere, and uttering his strange, rough, croaking cry, as unconcernedly as if the weather were soft and warm as springtime.

In captivity the raven is an exceedingly amusing, although mischievous creature, and displays a talent for the invention of mischief which is only

equaled by its rapidity of execution. Except when placed in an inclosed yard where there is nothing that is capable of damage, "a single raven will get through more mischief in one hour than a posse of boys in twelve, and as he always seems to imagine himself engaged in the performance of some extremely exemplary duty, and works his wicked will as methodically as if he had been regularly trained to the task, and very well paid for it, he excites no small amount of rage on the part of the

aggrieved person." He readily learns to speak, and retains many sounds which he has once learned.

The raven is nowhere abundant in Illinois. According to Mr. Nelson, it was formerly a not uncommon resident in the northeastern portion of the state, but now occurs only in winter and is rare. It frequents the sand hills along the lake shore from the last of October until spring. In winter they unite in small flocks and move from place to place.

WILD FLOWERS OF MAY.

PRESIDENT MARSH, in his report to the commissioners of Forest Park, Springfield, Mass., for 1899, mentions the following wild flowers as in bloom in the park during the month of May. We avoid the use of the botanical names:

WHITE BLOOM.

Star flower. Canada Mayflower. Shepherd's purse. White violet. Solomon's seal. False Solomon's seal. Bellwort. White baneberry. Wild strawberry.

YELLOW BLOOM.

Yellow violet. Common cinquefoil. Golden cup. Dandelion. Watercress.

PINK BLOOM.

Twisted stalk. Wild pink.

ORANGE AND RED BLOOM.

Lousewort.

BLUE AND PURPLE BLOOM.

Blue violet. Forget-me-not. Wild geranium. Ground ivy.

MISCELLANEOUS.

Jack-in-the-pulpit. Wild ginger. Wild pink azalea. Japanese hybrids. American rosemary. Parkman's crab.

Flowering apple. Thunberg's barberry. Ashberry. Japan ashberry. Bayberry. Leatherleaf. American Judas tree. Golden chain. Japan weeping cherry. Siebold's double red flowering cherry. Weeping wild cherry. Choke cherry. Wild plum. Sweet fern. Flowering dogwood. Red flowering dogwood. Weeping dogwood. Red osier dogwood. Siberian red osier. Sheep berry. Cranberry tree. Naked viburnum. English wayfarer's tree. Common snowball. White thorn. Pear-leaved thorn. English hawthorn. Japan quince. Chinese lilac. Flowering peach. Buffalo berry. Wild rose. Sweet brier rose. Weeping willow. Bridal wreath. Tree peony. Flowering almond. Shrub yellow root. Wild red raspberry. Thimble berry, or black raspberry. Huckleberry. Blueberry. Common high blackberry.

In the June number of *BIRDS AND ALL NATURE* we shall give the flower shrubs which bloom in that month. The annual report of the commissioners of parks at Springfield is a worthy example for others to follow.



FROM COL. F. KEMPTER.

336

RAVEN.
 $\frac{1}{8}$ Life-size.

COPYRIGHT 1900, BY
A. W. HUMFORD, CHICAGO.

RICE PAPER.

THE rice paper tree, one of the most interesting of the flora of China, has recently been successfully experimented with in Florida, where it now flourishes, with other sub-tropical and oriental species of trees and shrubs, says the *St. Louis Republic*. When first transplanted in American soil the experimenters expressed doubts of its hardiness, fearing that it would be unable to stand the winters. All these fears have vanished, however, and it is now the universal opinion that it is as well adapted to the climate of this country as to that of the famed Flowery Kingdom.

It is a small tree, growing to a height of less than fifteen feet, with a trunk or stem from three to five inches in diameter. Its canes, which vary in color according to season, are large, soft and downy, the form somewhat resembling that noticed in those of the castor-bean

plant. The celebrated rice paper, the product of this queer tree, is formed of thin slices of the pith, which is taken from the body of the tree in beautiful cylinders several inches in length.

The Chinese workmen apply the blade of a sharp, straight knife to these cylinders, and, turning them round either by rude machinery or by hand, dexterously pare the pith from circumference to center. This operation makes a roll of extra-quality paper, the scroll being of equal thickness throughout. After a cylinder has thus been pared it is unrolled, and weights are placed upon it until the surface is rendered uniformly smooth throughout its entire length.

It is altogether probable that if rice paper making becomes an industry in the United States these primitive modes will all be done away with.

GOOD UNCLE TO ANTS.

A KINDLY old English gentleman, Sir John Lubbock, Bart., is no more. He is not dead, but has ceased to be a plain baronet, as were his father, grandfather, and great-grandfather before him. Now he is a peer of the realm, and he is called Lord Avebury. The new honor, lately conferred by the Queen, Sir John probably owes to his great services in Parliament, for he is not only the owner of a big bank in London, and a distinguished financier, but also a representative in the English Parliament of

the University of London. In both fields his work for his fellow men has been such as to merit well an honor which all Englishmen are supposed to desire.

But we in America shall always remember him not as Lord Avebury, but as plain Sir John Lubbock, a man who probably knows more than any other in the world about the habits, nature and instincts of insects, especially of ants, bees and wasps, of which he has written more than one interesting book.

What the world needs for its happiness is more work, more achievement. Nature, which is never at rest, sets a superb example, not only of unceasing industry, but of exquisite workmanship. For not a beetle crawls along the ground but has a burnished back of ebony or jeweled green; not a weed by the roadside goes to seed but hides

its promise of next year's blossom in a pod of fairy delicacy; not a spider-web glitters in the sun that is not marvelous in its structure. If only the world could be more conscious of "the Master of all good workmen" there would be less heartache than there is.

"Some little nook or sunny bower,
God gives to every little flower."

A FLOATING SNAIL.

THESE is a small snail which is so fond of the sea that it never comes to land, and it builds such a capital boat for itself and its eggs that while large ships are sinking and steamers are unable to face the storm it tosses about in perfect safety, says the *Philadelphia Press*.

The little snail is of a violet color and is therefore called *Lanthina*. It has a small shell and there projects from the under part of the body a long, tongue-like piece of flesh. This is the raft, and it is built upon most scientific principles, for it has compartments in it for air. It is broad and the air compartments are underneath, so that it cannot capsize.

Moreover, the snail knows how to

stow away its cargo, for the oldest eggs and those which hatch the soonest are placed in the center and the lightest and newest on the sides of the raft. The *Lanthina* fills its own air compartments by getting a globule of air underneath its head, the body is then curved downward beneath the raft, and, the head being tilted on one side, the air rushes in and fills the spaces. It feeds on a beautiful little jelly fish, which has a flat, raft-like form with a pretty little sail upon it, and they congregate in multitudes when the sea is calm.

Sometimes specimens are washed upon the northwestern coast of France, and when they are handled they give out a violet dye.

EGYPTIAN TREES FOR AMERICA.

HERE is a new kind of tree with which people in some of the parts United States will probably celebrate Arbor Day after a while. In Southern California, Arizona and some parts of Texas, and, generally speaking, in the southwestern portion of this country, are great tracts of land without a solitary tree. The government has at last found a tree which it is believed will grow and thrive in these warm, dry climates, and has imported seeds and settings with which to make experiments. It is called the lebbek tree and is a native of Egypt. It grows to a large size and has a thick foliage, with compound leaves like those of the honey locust. The bark makes good dye stuff and

the wood is fair timber. One of the avenues leading to the great Pyramids is lined with these trees for a distance of four miles. They form a complete arch and the shade is so dense that no sun ever reaches the roadway beneath. In India these trees are called the *Siris* trees. They grow wild in the forest and their trunks attain a circumference of nine feet.

Their adaptability to the dry sections of the United states was discovered and reported upon by David G. Fairchild, one of the explorers for the agricultural department at Washington. The lebbek tree is a deep feeder and therefore is expected to thrive on the moist subsoil found at great depths even in the American desert.

INDEX.

VOLUME VII.—JANUARY, 1900, TO MAY, 1900, INCLUSIVE.

Figures in Black-Faced Type Indicate Illustrations.

ACROSS THE WAY	205	EASTER EGG, Origin of	151
A Curious Survival.....	233	Easter Lilies.....	152
A Glimpse of Beautiful Pictures.....	209	Egrets, The Young.....	137
A Good Uncle to Ants.....	239	Egyptian Trees for America..	240
Air, Liquid.....	37		
Animals as Patients.....	162	FABRICS, Linen	113
Animals, Danger from Importation of..	41	February.....	85
Animal Pets in School.....	108	Fish Have Favorite Haunts.....	239
April.....	145	Fishing, Uncle Nick on.....	194
A Scrap of Paper.....	59	Flowers, Wild of May.....	236
A Tragedy in Three Parts.....	175	Forest, A Submerged.....	197
		Forest, Moral Value of.....	152
BIRD, A Brigand	176	Fruit Bats in the Philippines.....	173
Birds and the Weather.....	29		
Birds and Reptiles Related.....	188	GENISTA, The	226 224
Birds and Farmers.....	228	Geography Lessons.....	73
Birds, A Strange House.....	167	Getting Acquainted with the Teacher...	121
Birdland Secrets.....	157	Goose Plant in Bloom.....	210
Birds, Migratory.....	204	Gopher, The.....	70 71
Bird Notes.....	19	Grosbeak, The Blue.....	183 182
Birds, Snow.....	79		
Birdlife in India.....	187	HANS AND MIZL	72
Birds, Snow Prisons of.....	164	Heron, A Baby.....	49
Birds, The Wise Little.....	7		
Birds, Taming.....	103	ILLUMINATIONS, Strange	30
Birds, The We May Hear Sing.....	193	Ibis, The Scarlet.....	154 155
Bird, The Dead.....	200	I Know Not Why.....	119
Bird, The Silliest.....	229	In the Old Log House.....	158
Bison, The American.....	42	Ireland's Lost Glory.....	188
Bittern, The American.....	147 146	January.....	1
Blackbird, The Yellow-Headed.....	15 14	Jay, Steller's.....	111 110
Bloodroot.....	178 179	Johnny Applesseed.....	211
Boar, The Brave.....	120		
Bobby's Cottontail.....	67	KILLDEER, The	51 50
Brook, The.....	176		
Butterfly's History.....	198	LILY OF THE VALLEY	46 47
		Lark, Song of the.....	101
CARBONS	82 83	Licorice.....	87 86
Chickadee, The.....	168		
Chippy, A Baby Mocking Bird.....	155	MAGPIE	195 198
Cotton Fabrics.....	5	March.....	103
Cotton Textiles.....	53	Marked with Bleeding Hearts.....	44
Coues, The Late Dr. Elliott.....	65	Martin, The Purple.....	207 206
Cup, The Scarlet-Painted.....	92	May.....	193
		Minerals, Common and.....	39 38
DAISY, The Field	200	Minerals, Common and.....	82 83
Dictionary, Bailey's.....	109	Minerals, Common and.....	142 139
Digitalis.....	231 170	Mink, The.....	75 74
Dogs, Something About.....	221	Mole Cricket Lodge.....	78
Dove, Ring-Necked.....	214 212	Monkeys as Gold Finders.....	173
Dove, The Turtle.....	44	Moth, The Cecropia.....	223
Dove, The Noah's Messenger.....	25	Mushrooms on Benches.....	48
Duck, The Ruddy.....	118 119	Muskrat.....	123 122
Duck, The Ring-Billed.....	166 167		

NATURALIST, The Young	36	Sparrow, The English	97
Naturalist, The Young.....	95	Sponges.....	138
Naturalist, The Young.....	143	Snail, A Floating.....	240
Naturalist, The Young.....	185	Songs, Remembered.....	13
Naturalist, The Young.....	215	Southward Bound.....	20
Nut-Hatch, Red-Breasted.....	202 203	Spider, The Grasshopper.....	8
ODD PLACES CHOSEN	182	Spring, The Herald of.....	102
Old Year and Young Year.....	1	Spring, The Procession of.....	145
Opossum.....	219 218	Spring Has Come.....	192
Ores, Common Minerals and.....	39 38	Squirrel, The Black.....	22 23
Ores, Common Minerals and.....	82 83	Stump, The Gray.....	12
Ores, Common Minerals and.....	142 139	TANSY CAKES	180
Our Feathered Neighbors.....	181	Teal, The Blue-Winged.....	10 11
Our Little Martyrs.....	136	Teal, The Cinnamon.....	58 59
PAPER, Rice	239	The Country! The Country!.....	68
Partridge, The Call.....	180	The New Sport.....	77
Peacock, The.....	99 98	The Pink House in the Apple Tree.....	31
Plants, Strange.....	175	The Swinging Lamps of Dawn.....	62
Poppy, The.....	130 128	The Treating of Whitey.....	127
Primrose, The.....	135 134	Thyme Plant, The.....	171 230
Ptarmigan, The Willow.....	106 107	Tree, The Sorrowful....	44
QUAIL, The Massena	159 158	Tree, The Triplet.....	163
Quince, The.....	34 35	Trees, Planting The.....	150
RAIL, The Clapper	63 62	Trees, Countries Devoid of.....	163
Rail, The Virginia.....	3 2	VEGETATION in the Philippines	80
Raven, The.....	238 235	WARBLER, The Sycamore ..	116
Reflections.....	169	Washington's Monument.....	96
Robin's Mistake.....	24	Weasel, The.....	27 26
SHELLS, The Rock	190 191	Where Vegetables Came From.....	227
Some Early Risers.....	212	Wings.....	119
Sparrow, Not a Falleth.....	125	With Open Eyes.....	17
		Woods, A Winter Walk in the.....	90

Now Ready Volume VII, "Birds and All Nature."

240 pages, cloth, \$1.50; half morocco, \$1.75; full morocco, \$2.00.
There has never been published before a series of books on natural history to compare with this series. Those who have the other six volumes will certainly want Volume VII.

Will you kindly send me the six bound volumes in half morocco, with bill, and I will send you check by return mail.

Boston, Mass., April 18, 1900.

C. J. PETERS.

Seeing the November number of "Birds and All Nature" the other day in our book store, bought it just to see what it was made of. It is pure gold.

Sullivan, Ill., Feb. 19, 1900.

MRS. MARION STEELE.

The pictures are truly marvelous. I only wish it was weekly instead of monthly.

Richmond, Ind., March 9, 1900.

HARRY PENLAND.

Find enclosed \$1.50 for "Birds." I have taken it since the first number and want it as long as I live.

Falk, Cal., March 11, 1900.

LIZZIE QUICK.

My attention has been called to "Birds and All Nature" and your Special Offer on the six volumes, cloth, at \$7.20. I enclose check for that amount for the books.

Woodland, N. Y., March 21, 1900.

EDWARD B. MILLER, Trustee District School.

Find enclosed my check for \$7.20 for which kindly send me six single volumes, cloth, "Birds and All Nature."

New York, N. Y., March 22, 1900.

THOS. R. WHITE, JR.

Last week I received the set of "Birds" I sent for. I am delighted with them and think that every birdlover should have the set. They are the best books on animals and birds that I have ever seen and wish them success. Please let me know when the next volume will be ready.

San Rafael, Cal., March, 1900.

ERNEST BLOIS DUBOIS.

A complete set of the seven volumes, cloth, sent prepaid for \$8.40.

A. W. MUMFORD, Publisher,
203 Michigan Ave., Chicago.

N. E. A.

TAKE THE

BIG 4 ROUTE

From Chicago and the Northwest, the ONLY LINE connecting
in the Central Union Depot, Cincinnati, with the direct lines to

CHARLESTON, S. C.

For maps, rates, sleeper reservation, etc., address

J. G. TUCKER, G. P. A. H. W. SPARKS, T. P. A.

234 Clark St., Chicago.

THE MOST BEAUTIFUL
PICTURES
EVER PUBLISHED.

BIRDS AND NATURE

15 Cents a Copy, \$1.50 Per Year.

MAGAZINES,
BOUND VOLUMES
and
COLORED PICTURES.

FOR THE SCHOOL AND HOME.

BOUND VOLUMES I, II, III, IV, V, VI, VII, each 8vo, 244 pages, from 40 to 60 colored pictures, 8x10 inches. Cloth, \$1.50; Half Morocco, \$1.75; Full Morocco, \$2.00. Combined volumes I and II, III and IV, V and VI. Each—Cloth, \$2.50; Half Morocco, \$3.00; Full Morocco, \$3.50. **Special Offer**—A set of seven single volumes—Cloth, \$8.40; Half Morocco, \$9.80; Full Morocco, \$11.20.

Exchange price for bound volumes when magazines are returned: Single volumes—Cloth, \$1.00; Half Morocco, \$1.25; Full Morocco, \$1.50. Combined volumes—Cloth, \$1.50; Half Morocco, \$2.00; Full Morocco, \$2.50.

MAGAZINES for 1897 (12 Nos.), \$2.00; single numbers, containing 10 colored pictures, 20 cents. 1898 or 1899, \$1.50 per year; single numbers, with 8 colored pictures, 15 cents. **Special Offer**—All of the magazines from January, 1897, to May, 1900, for \$4.50.

COLORED PICTURES, (Natural Colors) in monthly sets of ten, for 1897, each set 15 cents, or 12 sets \$1.50. For 1898, each monthly set of eight 12 cents, or 12 sets for \$1.25. 1899 pictures in monthly sets of eight, each 12 cents, or entire year's collection, 10 months, \$1.00. Pictures assorted as desired, 2 cents each. No order received for less than 20 pictures. **Special Offer**—The complete list of pictures—344—for only \$3.44.

JANUARY, 1897.

- 1 Nonpareil.
- 2 Resplendent Trogon.
- 3 Mandarin Duck.
- 4 Golden Pheasant.
- 5 Australian Parrakeet.
- 6 Cock of the Rock.
- 7 Red Bird of Paradise.
- 8 Yellow-throated Toucan.
- 9 Red-rumped Tanager.
- 10 Golden Oriole.

FEBRUARY, 1897.

- 11 American Blue Jay.
- 12 Swallow-tailed Indian Roller.
- 13 Red-headed Woodpecker.
- 14 Mexican Mot Mot.
- 15 King Parrot.
- 16 American Robin.
- 17 American Kingfisher.
- 18 Blue-mountain Lory.
- 19 Red-winged Black Bird.
- 20 Cardinal, or Red Bird.

MARCH, 1897.

- 21 Blue Bird.
- 22 Barn Swallow.
- 23 Brown Thrasher.
- 24 Japan Pheasant.
- 25 Bobolink.
- 26 American Crow.
- 27 Flicker.
- 28 Black Tern.
- 29 Meadow Lark.
- 30 Great Horned Owl.

APRIL, 1897.

- 31 Rose-breasted Grosbeak.
- 32 Canada Jay.
- 33 Purple Gallinule.
- 34 Smith's Longspur.
- 35 American Red Crossbills.
- 36 California Woodpecker.
- 37 Pied-billed Grebe.
- 38 Bohemian Wax Wing.
- 39 Long-billed Marsh Wren.
- 40 Arizona Jay.

MAY, 1897.

- 41 Screech Owl.
- 42 Orchard Oriole.
- 43 Marsh Hawk.
- 44 Scissor-tailed Flycatcher.
- 45 Black-capped Chickadee.
- 46 Prothonotary Warbler.
- 47 Indigo Bird.
- 48 Night Hawk.
- 49 Wood Thrush.
- 50 Cat Bird.

JUNE, 1897.

- 51 Yellow-throated Vireo.
- 52 American Mocking Bird.
- 53 Black-crowned Night Heron.
- 54 Ring-billed Gull.
- 55 Logger-head Shrike.
- 56 Baltimore Oriole.
- 57 Snowy Owl.
- 58 Scarlet Tanager.
- 59 Ruffed Grouse.
- 60 Black and White Creeping Warbler.

JULY, 1897.

- 61 American Bald Eagle.
- 62 Ring Plover.
- 63 Mallard Duck.
- 64 American Avocet.
- 65 Canvas-back Duck.
- 66 Wood Duck.
- 67 Anhinga, or Snake Bird.
- 68 American Woodcock.
- 69 White-winged Scoter.
- 70 Snowy Heron, or Little Egret.

AUGUST, 1897.

- 71 Osprey.
- 72 Sora Rail.
- 73 Kentucky Warbler.
- 74 Red-breasted Merganser.
- 75 Yellow Legs.
- 76 Skylark.
- 77 Wilson's Phalarope.
- 78 Evening Grosbeak.
- 79 Turkey Vulture.
- 80 Gambel's Partridge.

SEPTEMBER, 1897.

- 81 Summer Yellow Bird.
- 82 Hermit Thrush.
- 83 Song Sparrow.
- 84 Yellow-billed Cuckoo.
- 85 Ruby-throated Humming-Bird.

- 86 House Wren.
- 87 Phoebe.
- 88 Ruby-crowned Kinglet.
- 89 Mourning Dove.
- 90 White-breasted Nuthatch.

OCTOBER, 1897.

- 91 Blackburnian Warbler.
- 92 Gold Finch.
- 93 Chimney Swift.
- 94 Horned Lark.
- 95 Yellow-bellied Sapsucker.
- 96 Warbling Vireo.
- 97 Wood Pewee.
- 98 Snow Bunting.
- 99 Junco.
- 100 King Bird.

NOVEMBER, 1897.

- 101 Summer Tanager.
- 102 White-fronted Goose.
- 103 Turnstone.
- 104 Belted Piping Plover.
- 105 Wild Turkey.
- 106 Cerulean Warbler.
- 107 Yellow-billed Tropic Bird.
- 108 European Kingfisher.
- 109 Vermilion Flycatcher.
- 110 Lazuli Bunting.

DECEMBER, 1897.

- 111 Mountain Blue Bird.
- 112 English Sparrow.
- 113 Allen's Humming-Bird.
- 114 Green-winged Teal.
- 115 Black Grouse.
- 116 Flamingo.
- 117 Verdin.
- 118 Bronzed Grackle.
- 119 Ring-necked Pheasant.
- 120 Yellow-breasted Chat.

JANUARY, 1898.

- 121 Crowned Pigeon.
- 122 Red-eyed Vireo.
- 123 Fox Sparrow.
- 124 Bob White.
- 125 Passenger Pigeon.
- 126 Short-eared Owl.
- 127 Rose Cockatoo.
- 128 Mountain Partridge.

FEBRUARY, 1898.

- 129 Least Bittern.
- 130 Bald Pate Duck.
- 131 Purple Finch.
- 132 Red-bellied Woodpecker.
- 133 Sawwhet Owl.
- 134 Black Swan.
- 135 Snowy Plover.
- 136 Lesser Prairie Hen.

MARCH, 1898.

- 137 Black Duck.
- 138 Wilson's Petrel.
- 139 Blue-Gray Gnat-Catcher.
- 140 American Coot.
- 141 Ivory-billed Woodpecker.
- 142 American Sparrow Hawk.
- 143 Silver Pheasant.
- 144 Scaled Partridge.

APRIL, 1898.

- 145 Ovenbird.
- 146 American Three-toed Woodpecker.
- 147 Bartramian Sandpiper.
- 148 Nightingale.
- 149 Roseate Spoonbill.
- 150 Dickcissel.
- 151 Dusky Grouse.
- 152 Eggs, First Series.

MAY, 1898.

- 153 South American Rhea.
- 154 Baybreasted Warbler.
- 155 Black-necked Stilt.
- 156 Pintail Duck.
- 157 Double Yellow-headed Parrot.
- 158 Magnolia Warbler.
- 159 Great Blue Heron.
- 160 Eggs, Second Series.

JUNE, 1898.

- 161 Brunnich's Murre.
- 162 Canada Goose.
- 163 Brown Creeper.
- 164 Downy Woodpecker.
- 165 Old Squaw Duck.
- 166 White-faced Glossy Ibis.
- 167 Arkansas King Bird.
- 168 Eggs, Third Series.

JULY, 1898.

- 169 Wilson's Snipe.
- 170 Black Wolf.
- 171 Red Squirrel.
- 172 Prairie Hen.
- 173 Butterflies, First Series.
- 174 Gray Rabbit.
- 175 American Ocelot.
- 176 Apple Blossom.

A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago.

BIRDS AND ALL NATURE.—Continued.

AUGUST, 1898.

- 177 Wilson's Tern.
- 178 Coyote.
- 179 Fox Squirrel.
- 180 Loon.
- 181 Butterflies, Second Series.
- 182 American Red Fox.
- 183 Least Sandpiper.
- 184 Mountain Sheep.

SEPTEMBER, 1898.

- 185 American Herring Gull.
- 186 Raccoon.
- 187 Pigmy Antelope.
- 188 Red-shouldered Hawk.
- 189 Butterflies, Third Series.
- 190 American Gray Fox.
- 191 Gray Squirrel.
- 192 Pectoral Sandpiper.

OCTOBER, 1898.

- 193 King Bird of Paradise.
- 194 Peccary.
- 195 Bottle-nosed Dolphin.
- 196 Tufted Puffin.
- 197 Butterflies, Fourth Series.
- 198 Armadillo.
- 199 Red-headed Duck.
- 200 Golden Rod.

NOVEMBER, 1898.

- 201 Prairie Sharp-tail Grouse
- 202 Brown and Red Bat.
- 203 American Otter.
- 204 American Golden Plover
- 205 Moths.
- 206 Canadian Porcupine.
- 207 Caspian Tern.
- 208 Flowering Almond.

DECEMBER, 1898.

- 209 African Lion.
- 210 Cacti.
- 211 Flying Squirrel.
- 212 Humming-Birds.
- 213 Silkworm.
- 214 California Vulture.
- 215 American Goldeneye.
- 216 Skunk.

JANUARY, 1899.

- 217 Chimpanzee.
- 218 Puma.
- 219 Lemon.
- 220 American Mistletoe.
- 221 Nuts.
- 222 Whippoorwill.
- 223 Snapping Turtle.
- 224 Sandhill Crane.

FEBRUARY, 1899.

- 225 Ginger.
- 226 Crab-eating Opossum.
- 227 Geographic Turtle.
- 228 White Ibis.
- 229 Iris.
- 230 Duck-billed Platypus.
- 231 Cape May Warbler.
- 232 The Coconut.

MARCH, 1899.

- 233 Tufted Titmouse.
- 234 Northern Hare.
- 235 Pineapple.
- 236 Hooded Merganser.
- 237 Cloves.
- 238 Common Ground Hog.
- 239 Common Mole.
- 240 Azalea.

APRIL, 1899.

- 241 Nutmeg.
- 242 American Barn Owl.
- 243 Kangaroo.
- 244 Hoary Bat.
- 245 Nashville Warbler.
- 246 English Grapes.
- 247 Swift Fox.
- 248 Hyacinth.

MAY, 1899.

- 249 Cedar Waxwing.
- 250 Hyrax.
- 251 Coffee.
- 252 Bonaparte's Gull.
- 253 Common Baboon.
- 254 Grinnell's Water Thrush.
- 255 Hairy-Tailed Mole.
- 256 Cineraria.

JUNE, 1899.

- 257 A Feather Changing from Green to Yellow.
- 258 Western Yellow-Throat
- 259 Myrtle Warbler.
- 260 Blue-winged Yellow Warbler.
- 261 Golden-winged Warbler.
- 262 Mourning Warbler.
- 263 Chestnut-side Warbler.
- 264 Black-throated Blue Warbler.

SEPTEMBER, 1899.

- 265 Pointer Dog.
- 266 Shells.
- 267 Marbles.
- 268 Ores.
- 269 Minerals.
- 270 Water Lilies.
- 271 Yellow Perch.
- 272 Beetles.

OCTOBER, 1899.

- 273 Forests.
- 274 Grand Cañon.
- 275 Terraced Rocks, Yellowstone Park.
- 276 Rooster and Hen.
- 277 Oil Well.
- 278 Polished Woods.
- 279 Brook Trout.
- 280 Niagara Falls.

NOVEMBER, 1899.

- 281 Lady-Slipper.
- 282 Tea.
- 283 Towhee.
- 284 Canary.
- 285 Carolina Paroquet.
- 286 Chipmunk.
- 287 Peach.
- 288 Common Minerals and Valuable Ores.

DECEMBER, 1899.

- 289 Narcissus.
- 290 Coca.
- 291 Red-tailed Hawk.
- 292 Maryland Yellow-Throat.
- 293 Lyre Bird.
- 294 Cow Bird.
- 295 Wild Cat.
- 296 European Squirrel.

JANUARY, 1900.

- 297 Virginia Rail.
- 298 Blue-winged Teal.
- 299 Yellow-headed Blackbird.
- 300 Black Squirrel.
- 301 Weasel (Ermine).
- 302 Quince.
- 303 Quartz.
- 304 Lily of the Valley.

FEBRUARY, 1900.

- 305 Killdeer.
- 306 Cinnamon Teal.
- 307 Clapper Rail.
- 308 Gopher.
- 309 Mink.
- 310 Carbons.
- 311 Licorice.
- 312 Yellow Lady-Slipper and Painted Cup.

MARCH, 1900.

- 313 Peacock.
- 314 Willow Ptarmigan.
- 315 Stellar's Jay.
- 316 Ruddy Duck.
- 317 Muskrat.
- 318 Poppy.
- 319 Primrose.
- 320 Copper and Lead.

APRIL, 1900.

- 321 American Bittern.
- 322 Scarlet Ibis.
- 323 Massina Partridge.
- 324 Ring-billed Duck.
- 325 Thyme.
- 326 Bloodroot.
- 327 Western Blue Grosbeak.
- 328 Shells.

MAY, 1900.

- 329 Magpie.
- 330 Red-breasted Nut-hatch.
- 331 Purple Martin.
- 332 Ring-necked Dove.
- 333 Opossum.
- 334 Genista.
- 335 Digitalis.
- 336 Raven.

JUNE, 1900.

- 337 Wilson's Thrush.
- 338 Red or Wood Lily.
- 339 Common Sunfish.
- 340 A Mountain River.
- 341 Insects.
- 342 Brittany—(Cows).
- 343 Harvesting in the Great Northwest.
- 344 Homing Pigeon.

PREMIUMS—We will send free with each yearly subscription either of the following colored pictures: Song of the Lark, 18x21; Gladstone, 18x24; The Golden Pheasant, 18x24; Birth of the American Flag, 12x18, or Sixteen Pictures from Magazine. At the same time you send in your subscription you may order bound volumes, magazines or colored pictures from this circular at 33½ per cent discount and we will send them charges prepaid. Cash with order. At this rate you can purchase the pictures at one cent each in monthly sets, or 67 assorted for \$1.00.

SPECIAL OFFER—BIRDS AND ALL NATURE and extra monthly set of pictures one year, \$2.00; or BIRDS AND ALL NATURE one year and 50 assorted pictures from this list, \$2.00.

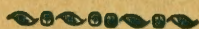
SAMPLE COPY OF MAGAZINE, 10 CENTS

A. W. MUMFORD, Publisher,
208 Michigan Avenue, Chicago.

Charts of North American Birds

Reduced from \$26.50 to \$15.00.

Without Doubt the Best Chart ever Presented to the Public.
Entirely Different from anything in the Market.



Teachers have tried every device possible during the last year to mount their Bird Plates in a manner convenient for use. We have now done this for them. One hundred and forty-five bird plates and three plates of eggs, including fifty-four different species, are put up on eighteen sheets of heavily coated manila paper, linen enforced, with covers, 24 x 32 inches, and tripod holder.

The groupings are original and adapted for class work. Each bird is grouped according to place where usually found, or to some peculiar characteristic.

They are as follows :

Plate 1, Birds of Prey.

" 2, Birds of the Tropics.

" 3, Birds of the Woods.

" 4, Game Birds.

" 5, Field Birds.

" 6, Meadow Birds.

" 7, Wading Birds.

" 8, Marsh and Shore Birds.

" 9 and 10, Swimming Birds.

Plate 11, Birds of Peculiar Beauty.

" 12, Birds of Peculiar Habits or Song.

" 13, Song Birds.

" 14, Warblers.

" 15, Finches.

" 16, Familiar Birds.

" 17, Tiny Birds.

" 18, Miscellaneous, including three Groups of Eggs.

There are from six to ten subjects on each plate, arranged in artistic manner. On the third cover-page of Chart is presented a complete outline, giving each bird in alphabetical order, its common and scientific names, and its number according to the check list of the American Ornithologists' Union.

For further information write for circular.

Special Offer until July 1, 1900.

I will send one Chart, with Tripod and Manual, prepaid, upon receipt of \$10.00, or upon receipt of \$15.00 I will send one Chart, Tripod, Manual, and a set of the six bound volumes of BIRDS AND ALL NATURE. You can't afford to miss this extraordinary offer.

A. W. MUMFORD, Publisher,
203 Michigan Avenue, Chicago.

